THE IRON TRADE REVIEW

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GREAT STRENGTH

AND HIGHER PRICES IN PIG IRON MARKET.

Many Furnaces Sold Far in Advance.—Shortage of Crude Steel Causes Uneasiness.—Few Sales of Rails.

The pig iron market has developed surprising strength. Following the heavy buying of steel-making irons, recently reported, orders in large volume for all grades of pig iron have been placed, and this week there has been a sharp advance in quotations in all sections of the country. In the south, no iron can now be obtained at $18.50, and the leading producer is asking $20 for No. 2 foundry Birmingham for delivery during the last half of the year. Several very large southern interests are out of the market for the third quarter, and the supply for the last quarter is limited. In the east and central west, conditions are also very strong. Reports to the Eastern Pig Iron Association indicate furnaces sold up five or six months in advance and in the valleys, Buffalo, Cleveland and Chicago districts the available supply for the remainder of this year is very small, some furnaces having sold their entire estimated product up to Jan. 1, 1908. In the valleys, the very lowest quotation made on No. 2 foundry and Bessemer is $22.50, while $23 is generally asked. In view of the strong demand and the heavy orders on hand, it seems inevitable that prices will go higher. This condition is regretted by many conservative interests whose influence has been futile in attempting to check the upward tendency. It is well to remember that the highest prices named are by interests having little iron to sell and that the tonnage which will be sold at very high quotations for this year's delivery cannot be great. Hence the effect on finished lines can not be so important as it would be if the furnace order books were not so well filled.

Crude Steel Shortage

Second only in interest to the pig iron situation is the shortage in semi-finished material. The sale of over 75,000 tons of crude steel for last half delivery at about $31.50 delivered Pittsburg exhausts the estimated production of one of the largest independent producing interests for the remainder of the year on billets and sheet bars. In both the Pittsburg and Chicago districts the shortage is acute.

Rail Sales Not Large

Although the old story of activity of the mills and slow deliveries might be repeated this week, new business is not in great volume. The railroads have not eagerly responded to the invitation to place orders for steel rails for 1908 delivery, and, although leading systems are said to be preparing to make heavy inquiries, the attitude of hesitancy is rather disappointing. The plate situation continues strong. The Corporation mills have not been able to take an order for 30,000 tons from a western car builder. The cast iron pipe market is active in the central west, but quiet in the east. The coke market is somewhat stronger, but prices for prompt delivery are still low.

ENGLISH IRON HIGHER

And the Eastern Market Stronger—Moderate Rail Sales.

(Special Telegram.)

New York N. Y., May 1.—Rail sales of the week aggregate about 47,000 tons, chiefly in one lot, the purchaser of which is not announced. A part of this tonnage was for next year's delivery..

The pig iron situation is stronger, with a considerable buying movement. Cleveland warrants opened today at 58 shillings four pence. Several interests have advanced No. 3 Middlesboro to $22 tidewater.

FLOOD CONDITIONS

Affect Earnings of the Steel Corporation—Unfilled Orders Reduced.

New York, N. Y., May 1.—The report of the United States Steel Corporation for the quarter ending with March made public at the meeting of directors held yesterday shows total earnings of $39,122,492. Changes in bookkeeping methods make a comparison difficult, but in round numbers this is $2,500,000 less than the December quarter and about that amount larger than the corresponding quarter last year. Unfilled orders on hand were 8,043,850 tons, which is 446,000 less than at the end of the previous quarter, but with this exception is the largest in the history of the Corporation, being more than a million tons in excess of the figure a year ago. Delay and damage resulting from floods in the Pittsburg district had a noticeable effect on the quarter's earnings. No change was made in the dividend rate and the official staff was reelected without change, the executive and other committees continuing as heretofore.

More Shipping Capacity.—Robert Angst has just compiled his valuable report on the ore docks of the upper lakes. Since the last report, extensive improvements have been made in some of the docks, while others, notably Messabe No. 1 at Duluth, have been dismantled. Improvements are now in progress on Great Northern dock No. 1 in Allouez Bay, and to the Duluth & Iron Range dock at Two Harbors. While the actual storage capacity of the docks on May 1 shows a slight reduction over the corresponding date last year, being 1,226,343 tons as against 1,282,100 tons, the actual shipping capacity by reason of modern improvements has been greatly increased. It is admitted, however, that there is still room for improvement in ore shipping docks.

Assets Increase.—The Midvale Steel Co., Philadelphia, has filed with the secretary of state in Massachusetts a statement of its financial condition dated Oct. 31, 1906. The statement shows assets of $13,669,043 on Oct. 31, compared to $11,839,510 on Jan. 8, 1906.

THE WEEK IN IRON CENTERS.

PITTSBURG

Pig Iron Approaches Runaway Market.—Supply of Crude Steel Small.

Office of THE IRON TRADE REVIEW.
521 Park Bldg., May 1.

It is a difficult matter at this time and in this market to determine whether it is the available supply of steel making and foundry pig iron for last half deliveries, or the supply of semi-finished steel that is receiving the closest attention. Both lines have tightened to an extent where the situation is rapidly approaching the acute stage.

The unsold tonnage of steel making pig iron in the valleys is known to be small; in fact, smaller than the active inquiries now in the market and smaller than many of the large furnace companies will admit at this time. On the other hand, one or two of the independent merchant furnaces are known to be holding off on their third and fourth quarter iron in anticipation of still higher prices. The element of danger always accompanying a runaway market is being discussed on every side and an effort being made to stem the tide, but nothing potent has as yet been suggested or done. Prices of finished material have not advanced and what practically amounts to an assurance that these prices will remain as they are throughout the year has been given by the big producers, but, with pig iron advanced $2 per ton within the past three weeks, it is stated that the margin between raw material and finished products is just about as close as it can safely be made.

The supply of semi-finished material is almost as alarmingly short of requirements as pig iron and the sale during the past week of over 75,000 tons for last half at a price but very little under $31.50 delivered Pittsburg cleans up one of the two large independent producers for the remainder of the year on Bessemer billets and sheet bars. The Corporation is endeavoring to avoid entering into any new contracts for semi-finished material and as fast as possible is chopping off old contracts, and another large independent interest is known to be short of steel for its own requirements and compelled from time to time to shut down some of its mills on this account.

New buying, while it is steady in most lines, has been comparatively light, and every effort is being made to secure deliveries on existing contracts. The mills are practically swamped with specifications and it is very much the exception rather than the rule if delivery promises are made short of three months and extending from that to six months. The American Bridge Co. promises are now September, the American Sheet & Tin Plate Co., August and September, the National Tube Co., about the same and this filled up condition is in no way confined to United States Steel Corporation interests although on account of the volume of business their delivery promises are further into the future than those of other interests.

The opening of order books for 1908 rails has not brought out the contracts expected and which mills were anticipating when they took this action. Railroads say they have not arrived at the point where they know definitely what their requirements will be. The announcement that the Pennsylvania lines would want 153,000 tons created considerable speculation, but the inquiry has not reached local interests. President McCrea, of the Pennsylvania lines, is now in Europe and it is not probable that this contract would be placed during his absence from the country. The Louisville & Nashville contract for 46,000 tons of open-hearth rails with the Tennessee Coal, Iron & R. R. Co., while it is significant, has not the importance it would have, had the business not been between very closely allied interests.

Pig Iron.—The pig iron market is in a very peculiar condition, and so nearly approaches a runaway that several interests have been trying to apply the brakes, but with very little success. One point has caused a great deal of discussion, and this is as to where the last half furnace output was sold to such an extent that the sales of 250,000 three weeks ago brought out the announcement that both the Bessemer Association and W. P. Snyder & Co., were practically cleaned up for the last six months of the year, and that to complete these deals independent valley furnace interests were drawn upon. It has been suggested that some of the large steel making interests covered on the quiet, but emphatic denials meet this from those who should know. The sales during the past week, as far as announced, have not been large, the Bessemer Association having sold 1,000 tons of Bessemer for May delivery at $23, valley and 250 tons at the same price for spot shipment, while a foundry company making ingot molds bought 6,000 last half at $22.75, valley. Another large producer of pig iron bought 16,000 tons for resale at $22, valley, for last half and negotiations are now on with a big independent steel making interest for a large last half tonnage, the reason for not closing being inability to agree upon price. An accommodation sale of 1,300 tons of May and June Bessemer at $23 valley is also noted.

During the past week the Tennessee Co. reports the sale in various lots of 50,000 tons, in round numbers of No. 2 southern foundry iron for last half at $18.50 and Sloss-Sheffield sold 11,000 tons at $19 Birmingham. These prices have since that time been advanced 50 cents and $1 respectively, for last half deliveries. Chicago and St. Louis got the major part of this southern iron with Cincinnati and New York second.

Northern No. 2 foundry iron is tight for the last half of the year and $22.50 valley is the minimum, while most quotations are $23 valley. Spot northern foundry has sold at $27, valley. Indications are that foreign iron will be the last resort to a greater extent than heretofore to make up for the deficiency in the supply of foundry irons. On third quarter deliveries we quote as follows:

Bessemer, Valley	$22.50 to 23.00
Bessemer, Pittsburg	23.35 to 23.85
No. 1 Foundry, Pittsburg	23.60 to 24.00
No. 2 Foundry, Pittsburg	23.35 to 23.85
Gray Forge, Pittsburg	22.35 to 22.85
Basic, Valley	22.50 to 23.00
Basic, Pittsburg	23.35 to 23.85

Ferro-Manganese.—There are a few fair sized inquiries in the market for last half deliveries, but the impression prevails that the large buyers have covered. Prompt ferro-manganese, foreign 80 per cent is quoted $70 and for last half $66 to $67, delivered Pittsburg. Imported 50 per cent ferro-silicon is quoted $110 Pittsburg; domestic 12 per cent, $36; 11 per cent, $35; 10 per cent, $34; with the lower grades imported ferro-silicon, $1 higher.

Steel.—The inadequate supply of semi-finished steel including all lines, billets, sheet bars and slabs, is the backbone of the present very strong situation. There is practically no more semi-finished material to be had for

prompt shipment or delivery through the remaining portion of the second quarter, and for these deliveries all quotations are purely nominal and, as a matter of fact, for last half, quotations in view of events of the past week are little more than nominal, as the available supply by producers who usually sell in the open market has been practically exhausted. One of the big producers, not an interest of the United States Steel Corporation, has announced itself as out of the market on billets, sheet and tin bars for the last half of the year, and it is understood that it has sold within the past week over 75,000 tons at prices ranging about $31.50 Pittsburg, this including both sheet bars and 4 x 4 billets. Several independent sheet mills have inquiries out for last half requirements, and some of these have been turned down by at least two producing mills. Most manufacturers of this semi-finished material have assumed an attitude that they will not sell for third quarter alone, but that all contracts placed must run through the remainder of the year.

Wire and Wire Nails.—This early in the season, two months before the customary summer let up, mills are making preparations to run to full capacity through the summer months. Last year was a record breaker as far as new business during the summer was concerned, and all indications are that the coming summer will far eclipse last year's record. The regulation sixty-day contract period has in many instances been extended to 90 days in order to permit buyers to place their business and specify against their contracts for a time farther ahead than is usually allowed. The filled-up condition of the mills is a tiresome subject, having been dwelt upon continuously for the past four or five months, but no change can be noted at this time. We continue to quote:

Wire nails, jobbers' carload lots, $2; retailers' carload lots, $2.05; less than carloads, $2.10; painted barb wire, $2.15, for jobbers in carloads; retailers in carloads, $2.20; and less than carload, $2.30, with 30c for galvanizing; plain wire, $1.85 for jobbers, and $1.90 by carload.

Merchant Bars.—While the bulk of the steel bar business coming from manufacturers of agricultural implements will not be placed before June, these interests having announced that they will not be ready before then, some of the smaller concerns have come into the market during the past week, and one producer has sold 1,500 tons in two lots at the full card rate, 1.60c base Pittsburg and extras. Aside from this, new bookings have not been heavy in steel bars, but specifications have been very large against existing contracts. Bar iron is still weak in this district, and one small interest with two merchant mills has been quoting 1.70c delivered Pittsburg, but the larger interests are maintaining their price of 1.80c base Pittsburg for Pittsburg deliveries, and 1.60c base Pittsburg plus freight to points of shipment for western deliveries. We quote as follows:

Common iron bars, 1.75c to 1.80c Pittsburg in carload lots and over; 1.80c to 1.85c in less than carloads; Bessemer steel bars, 1.60c, net; plow and cultivator, 1.60c, net; channels, angles, zees, tees, under three inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 50 per cent off in carload lots, and 5 per cent off in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. The price of planished and machine straightened tire is 1.80c, base, half tire extras. Iron finished tire up to 1½ inch and over to be sold on regular bar basis of 1.60c base, half extras, steel card.

Sheets.—The past week, as far as new sheet business is concerned, has been the heaviest in the past two months, or since the beginning of the recent Wall Street bear movement, and one interest has taken on from two buyers 14,000 tons for last half, aside from the ordinary running routine bookings. Mills in position to make deliveries from five to six weeks, and these are comparatively few, are experiencing no difficulty in securing from $1.50 to $2.00 premium. The car supply in the Pittsburg district has improved very materially and this has had a tendency of enabling a better shipping movement, and accumulated stocks at the mills are greatly reduced, although this has not materially affected delivery promises on account of the very heavy specifications being received. Official quotations are unchanged as follows:

Black steel sheets one pass, cold rolled, Nos. 11-12, 2.20c; Nos. 13-14, 2.25c; Nos. 15-16, 2.30c; Nos. 17-21, 2.35c; Nos. 22-24, 2.40c; Nos. 25-26, 2.45c; No. 27, 2.50c; No. 28, 2.60c; No. 29, 2.75c; No. 30, 2.85c; galvanized, Nos. 10-11, 2.65c; Nos. 12-14, 2.75c; Nos. 15-16, 2.85c; Nos. 17-21, 3.00c; Nos. 22-24, 3.15c; Nos. 25-26, 3.35c; No. 27, 3.55c; No. 28, 3.75c; No. 29, 4.00c; No. 30, 4.25c. Corrugated roofing, $1.85 per square for No. 28 painted, 2½-inch corrugation, and $3.25 per square No. 28.

Plates.—The extremely heavy demand for plates by all interests continues unabated, and, with the number of new cars upon which estimates are now being secured, some difficulty is going to be experienced by users of plates in getting their material. Delivery promises are now all the way from two to six months on the straight lines. The only assistance appearing within the past month has been in the decreasing demand for plates by the lake ship yards on account of labor troubles general at all ship building plants, and this tonnage has readily been diverted to other congested interests. We continue to quote the following official prices:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.70c f. o. b. mill Pittsburg. Light plate schedule, No. 10, 1.80c; Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c; extras on the regular plate schedule are as follows per 100 pounds: Boiler and flange steel plates, 0.10c. A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than four inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gages under ¼-inch to and including 3-16-inch plate on thin edges, 0.10c; under 3-16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Tin Plate.—Although the individual orders being received are spasmodic, the aggregate new tonnage placed during the past week for third quarter and last half delivery has been up to the average, and a little bit better than is expected this time of the year when the bulk of tin plate for the large canning interests has already been placed and a large part of it shipped. We continue to quote as follows:

Coke tin plate 100-pound basis, 14 x 20, $3.90 f. o. b. mill, Pittsburg district. Terms, 30 days, less two per cent for cash in ten days.

Hoops, Bands and Cotton Ties.—Reports from the south are to the effect that the opening of the cotton tie market at 95 cents per bundle on April 25 has been well received and between 600,000 and 750,000 bundles have already been sold. The estimated require-

ments for the season are about 2,500,000 bundles. It is not likely that imported cotton ties will be much of a factor this year on account of the late opening of the market and inability of importers to get their goods on the ground at the time required. On hoops and bands the market has been quiet with specifications and mill shipments running about even. The new business is expected to come in heavy about the middle of the year. We quote as follows:

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel.

Rails and Track Material.—While reports from New York are to the effect that the Pennsylvania railway is in the market for 153,000 tons standard rails for 1908, this inquiry has not as yet reached local mills, and as a matter of fact practically no 1908 business has yet been placed with northern mills. The market was opened with the expectation and on the strength of numerous inquiries which led manufacturers to believe that the railroads were ready to place contracts for next year's requirements, but since the opening of the market, it has become evident that they are not yet in shape to announce their tonnages. The current week has been very light on standard sections and only fair on light rails. Prices are unchanged as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 50 tons, $30; less than carload lots, $32; 8-pound, $40; 12-pound, $36 to $37; 16-pound, $35 to $36; 20-pound, $34 to $35; 25 to 45-pound, $33 to $34; angle splice bars for standard sections, $1.65; spikes for forward deliveries, $2.50.

Merchant Pipe.—The Youngstown Sheet & Tube Co. is the only pipe interest now issuing a card of Pittsburg basing discounts, and last week, as stated in THE IRON TRADE REVIEW, it revised its nominal quotations, announcing an advance of $2 per ton, making its price on ¼ inch to six inch base sizes 72 on black and 62 on galvanized merchant steel pipe. Based on the new card, the lowest price to the jobbing trade for carload lots will be 73 and five Pittsburg based on base sizes. The National Tube Co. has no official price, but is still accepting business subject to prices to be announced later and for shipment at its own convenience. We quote nominally as follows on random lengths with threads and couplings:

	—Steel— black.	galv.
⅛ to ¼ inch	64	48
⅜ inch	66	52
½ inch	68	56
¾ to 6 inches	72	62
7 to 12 inches	67	52
EXTRA STRONG PLAIN ENDS.		
⅛ to ¾ inch	57	45
⅛ to 4 inches	64	52
4½ to 8 inches	60	48
Double extra strong plain ends, ⅛ to 8 inches	53	42

Coke.—There is more spot coke, both furnace and foundry grades, in the market at the present time than there has been at any one time since last fall. The surplus of furnace coke is attributed to the suspension by the large number of furnaces, either shut down for repairs or running easy on account of a shortage in their ore supply. This latter condition will be eliminated before the next ten days when the new ore will arrive at Lake Erie docks from Lake Superior regions. A large part of the foundry coke suspensions is attributed to non-deliveries of pig iron by merchant furnaces. Several consumers of furnace coke during the past week have turned sellers to dispose of their accumulated stocks not used on account of the reasons here given. To meet the situation, quite a few of the large operations of the Connellsville region have reduced production by suspending operations from two to three days a week. Standard Connellsville 72-hour foundry coke for spot shipment is now quoted $3.25 to $3.35, although some sales have been made as low as $2.85 and $3.00. Furnace coke for spot shipment is quoted $2.30 to $2.40 at the ovens. Coke producers are not showing any great disposition to quote prices for last half deliveries under present conditions, although we note one contract of 5,000 tons per month for furnace coke through the last half at $2.50. Furnace coke prices are expected to advance as soon as the new ore supply is available.

Old Material.—As has been noted for several weeks past, there has been a gradual easing up in general market conditions on old material and similar reports from the Chicago and Cleveland districts have been reflected on the Pittsburg market. Scrap has been coming out a little more freely than it was, and the little dealers have evidently arrived at the conclusion that conditions are not going to improve soon, and are letting go of their holdings, while consumers of stocks are not yet down to the point where they are willing to take hold and buy, this resulting in a very hard trading market. Borings and cast scrap are the only real active features, the former being a shade weaker and the latter a very little stronger. For deliveries in the Pittsburg district we quote as follows:

Heavy melting scrap, $18 to $18.25; re-rolling rails, $19 to $19.50; bundled sheet scrap, $16.50 to $16.75; iron axles, $30.50 to $31; old iron rails, $23 to $23.50; No. 1 wrought scrap, $19 to $19.25; old car wheels, $24.50 to $25; low phosphorus scrap, $22.50 to $23; machine shop turnings, $15.50 to $16; axle turnings, $16.50 to $17; cast borings, $13.25 to $13.75; No. 1 cast scrap, $20.50 to $21.

CHICAGO.

Rail Orders for New York Disappointing.—Pig Iron Active and Prices Higher.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, April 30

The rail tonnage for 1908 delivery placed with mills since the opening of order books ten days ago is exceedingly small in comparison with the deluge of orders that followed the mill announcement in the years 1905 and 1906. Last year the local mill had sold nearly its entire output for 1907 in less than two weeks after its books were opened in June. This year, after the same lapse of time, contracts closed aggregate less than 50,000 tons, with options in hand for not more than 75,000 tons, a showing entirely unexpected in the light of conditions in other branches of the iron and steel trade. This condition is explained by mill interests either as a result of the early opening of books, or as a consequence of the adverse legislation passed by the various states in recent months. There is no lack of activity in other products, however. Melters of pig iron have been unusually diligent covering for their forward requirements, the volume of business placed with furnaces in the week under review exceeding that of any other week this year. One large producer has withdrawn from the market, while other Birmingham sellers have advanced their quotations from 50 cents to $1 a ton. In finished lines, demand is most pronounced for plates and sheets. An order for 30,000 tons of plates from a car builder could not be placed with any Steel Corporation plant, so tightly sold ahead on this product is this interest. Implement interests are covering more freely for steel bars; and in structural steel, two contracts, long pending, involving 5,600 tons of shapes, have at last been closed. Inquiry for cast iron pipe continues good, contracts closed since our last report aggregating nearly 5,000 tons. Transactions pending involve 10,000 tons additional. All mill quotations on merchant pipe have been withdrawn, the only open prices being on lots from store, which are unchanged at 70 off the list. Scrap and coke continue weak.

Pig Iron.—As a result of the remarkably active buying movement in the past ten days, Birmingham irons have advanced from 50 cents to $1 a ton for all deliveries. The minimum quotation

now for the full second half is $19.25 Birmingham for No. 2 foundry; while for the third quarter, $19.50 is the best price obtainable, and $19 for the fourth quarter. Spot iron is again back to the $23 Birmingham basis, and is extremely firm at that figure. June deliveries are a little easier, the spread for this month ranging from $22 to $22.50, Birmingham, for No. 2. These quotations are not general, but they represent the bottom prices ruling today. The Sloss-Sheffield schedule is $1 higher for both third and fourth quarters, but the company has only Sheffield iron to offer for the first mentioned period. The Tennessee and Republic companies have entirely withdrawn from the market for the last half, having taken a very large tonnage for that delivery in the past two weeks on the basis of $18.50. Virginia irons are unchanged at $23 furnace for No. 2 for May and June, and $21 furnace for the second half. Trading last week largely involved southern irons. The demand included all classes of melters in all sections of the territory. Northern irons are unchanged, except that the tonnage available for the last half rapidly grows smaller. The Iroquois Iron Co., now has less than 10,000 tons of its production for this period unsold. Quotations for the last half on No. 2 foundry and malleable Bessemer, range from $24 to $24.50, Chicago, and for May and June shipments from $26.50 upwards. Inquiry for foreign iron is increasing, local quotations being $26, Chicago, for Middlesboro for forward shipment, and $28 to $28.50 Chicago for spot Scotch. Indications point to a large consumption of these products in the west during the next six months, owing to the inability of local furnaces to meet the demand. We have revised our prices, and quote as follows:

Lake Superior charcoal	$26.50 to 27.00
Northern Foundry No. 1	24.50 to 25.00
Northern Foundry No. 2	24.00 to 24.50
Northern Foundry No. 3	23.50 to 24.00
Northern Scotch Foundry	24.50 to 25.00
Ohio Strong Softeners No. 1	23.80 to 24.30
Ohio Strong Softeners No. 2	23.30 to 23.80
Southern Foundry No. 1	23.85 to 24.35
Southern Foundry No. 2	23.35 to 23.85
Southern Foundry No. 3	22.85 to 23.35
Southern Foundry No. 4	22.35 to 22.85
Southern No. 1 Soft	23.85 to 24.35
Southern No. 2 Soft	23.35 to 23.85
Southern Gray Forge	21.85 to 22.35
Southern Mottled	21.35 to 21.85
Southern Silveries, 4 per cent to 6 per cent Silicon	23.85 to 24.85
Jackson Co. Silveries, 8 to 10 per cent Silicon	31.40 to 33.40
Malleable Bessemer	24.00 to 24.50

Billets and Rods.—A sale of 5,000 tons of sheet bars for last half delivery was made to a western interest last week on the basis of $30.75 Youngstown. Inquiry is plentiful for rods, but western makers are not in position to take on additional tonnage and current quotations of $37 to $39 Pittsburg are merely nominal. There is also a good demand for forging billets. Quotations on these are firm at a range of $36 to $38 Chicago, according to tonnage and delivery required.

Iron and Steel Bars.—Additional sales of steel bars have been made to implement interests in the past week. Inquiry from this source is rapidly broadening and the prospects indicate a sharp buying movement at an early date. Among the "feelers" are several from large consuming interests, whose aggregate tonnage runs heavily into five figures. Bedstead makers are also sounding the market on season requirements of hard steel angles. These are firmly held by local makers at 1.75c, Chicago. No change is noted in bar iron, the price of which ranges from 1.50c to 1.65c Pittsburg, according to tonnage and delivery required. Specifications and new tonnage for this product are of good volume. Other prices are as follows:

Soft steel bars and bands, 1.76½c, half extras; soft steel angles, less than 3 x 3, 1.86½c; hoops, 2.16½c base, full extras. We quote bar iron from stock 2.25c, full extras; soft steel rounds and squares, 3 inches and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by ¼ inch and larger, $2 per 100 pounds base; 4½ inches x 5 inches and 6 inches x 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands $2, half extras; soft steel hoops, 2.40c to 2.50c full extras. Other sizes not mentioned above, $2 per 100 pounds base plus half extras.

Plates.—The tightly sold condition of the Steel Corporation mills is emphasized by their inability to accept an order for 30,000 tons of sheared plates offered a few days ago by a western car builder. This was first offered to the local mill and later to the Carnegie Steel Co., but neither interest could take care of the tonnage. The Illinois Steel Co. has withdrawn entirely from the market for the remainder of the year, the prospects being that a considerable portion of the tonnage booked will be carried over into 1908. Jobbers report a stiff demand from stock and an increasing difficulty to keep their lines complete. Prices are without change as follows:

Plates ¼ inch and thicker 6⅛ to 100 inches wide, either universal or sheared, 1.70c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago, 16½c per 100 pounds. Jobbers' prices for shipment from local stocks are as follows: Tank steel ¼ inch and heavier up to 72 inches wide, 2.20c; 3-16 inch up to and including 60 inches wide, 2.30c; 3-16 inch 72 inches wide, 2.55c; No. 8 up to 60 inches wide, 2.35c. Flange steel, 25c extra; heads, 25c extra.

Sheets.—No change is noted in the local situation. Demand continues at high water mark, current orders covering requirements far into the year. Specifications are so heavy that mills have given up hope of overtaking their delinquent tonnage. Jobbers are having trouble in maintaining a full complement of stocks, and are holding rigidly to the new schedule of prices. We quote as follows:

Black sheets Nos. 8, 9 and 10, 1.90c Pittsburg; No. 28, 2.60c Pittsburg. Galvanized sheets No. 28, 3.75c Pittsburg. Freight to Chicago 16½ per 100 pounds. Jobbers' prices on carload lots or less from store are as follows: No. 10, 2.50c to 2.55c; No. 12, 2.55c to 2.60c; No. 14, 2.60c to 2.65c; No. 16 2.65c to 2.70c; Nos. 18-20, 2.80c to 2.90c; Nos. 22-24, 2.85c to 2.95c; No. 26, 2.90c to 3c; No. 27, 2.95c to 3.05c; No. 28, 3.05c to 3.15c; No. 30, 3.35c to 3.45c. Galvanized sheets, No. 10 to 20, 3.50c to 3.55c; Nos. 22 and 24, 3.65c to 3.75c; No. 26, 3.85c to 3.90c; No. 27, 4.05c to 4.15c; No. 28, 4.25c to 4.35c; No. 30, 5.40c to 5.45c.

Structural Steel.—The contract for the Chicago Telephone Co.'s new building, the steel requirements of which amount to 1,100 tons, has been let to the Hansell-Elcock Co., this city, its bid being $56 a ton delivered. The Brown-Ketcham Iron Works, Indianapolis, secured the contract for the steel construction in the Corn Exchange bank, amounting to 4,500 tons, which was closed at $54.50 per ton, delivered. Figures are being asked by Architect Rubush, of Indianapolis, on an office building to be erected in that city, involving 2,800 tons of steel. The Merchants' National bank building, Indianapolis, 2,500 tons, and the new theater and office building, Milwaukee, 3,000 tons, are still pending. The movement from mill and store continues undiminished. Prices are without change, as follows:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from that city to Chicago is 16½c per 100 pounds. Quotations from stores are as follows:

All angles, three inches and larger, including six inches, $2.05 to $2.10 per 100 pounds; angles over six inches, $2.15 per 100 pounds base, beams, three inches to 15 inches, inclusive, $2.05 to $2.10 per 100 pounds base; channels, three inches and larger, $2.05 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—Since the opening of rail order books for 1908 delivery a week ago, contracts pending or placed with the local mill, aggregate close to 100,000 tons. These include an

order for 30,000 tons; another for 12,000 tons, and two of 3,500 tons and 1,600 tons respectively. It is noticeable, however, that inquiry is neither as free nor as heavy as was buying in 1906 and 1907 immediately following the opening of books, but this is attributed to the early date at which books have been opened this year. If the Gary rail mill is in operation by midsummer of 1908, as is now expected, the local branches of the Steel Corporation will have about 1,250,000 tons of standard sections to dispose of that year, an outout more than sufficient to take care of prospective western requirements in this material. Prices are without change, as follows:

Bessemer rails, $28 to $30; less than 500-ton lots, $32; open-hearth rails, $29; light rails, Bessemer, 30 to 45-pound sections, $35; 25-pound, $36; 20-pound, $37; 16-pound, $38; 12-pound, $39, and lighter sections down to 8-pound, $45.50, all f. o. b. mill. Track supplies vary in price according to quantity and delivery. On orders accompanying rail contracts for future delivery, we quote angle bars, 1.65c; spikes, 2.35c; bolts with square nuts, 2.65c; with hexagon nuts, 2.80c. For carload lots or less, for prompt shipment, the following prices are asked: Angle bars, 2.25c to 2.75c; spikes, 2.60c to 2.70c; bolts with square nuts, 2.85c; with hexagon nuts, 3c

Merchant Steel.—New tonnage is confined to desultory orders for 1907-1908 consumption. The implement trade is keeping in close touch with mills, but until crop prospects are more clearly outlined than they are at the present time, active contracting is not expected. Specifications maintain their past volume, the entire output of mills going into immediate consumption. Prices are without change as follows:

Planished or smooth finished tire steel, 1.96½c; iron finish, up to 1½ x ½ inch, 1.91½c base; iron finish, 1½ x ½ inch and larger, 1.76½c base; channels for solid rubber tires, ¾ to 1 inch, 2.26½c, and 1⅛ inch and larger, 2.16½c; smooth finished machinery steel, 2.16½c; flat sleigh shoe, 1.81½c; concave and convex sleigh shoe, 2.06½c; cutter shoe, 2.35c; toe calk steel, 2.31½c; railway spring, 1.96½c; crucible tool steel, 6½c to 8c, with higher prices asked on special grades. Shafting is very strong. Quotations are without change at 50 per cent off in car lots and 45 per cent in less than car lots in base territory.

Cast Iron Pipe.—Contracting in the week under review was active, the United States Cast Iron Pipe & Foundry Co. being awarded the following contracts: Cincinnati, 2,500 tons; Denver Gas Co., 800 to 1,000 tons; Arlington Heights, Ill., 300 to 400 tons; Bellingham, Wash., 150 tons; North Maine Junction, Maine, 150 tons. The St. Louis contract for 6,000 tons will be let Friday, of this week. The Los Angeles inquiry for 2,500 tons, and that of Kalamazoo, Mich., 300 tons, are still pending. Prices are very firm, but without change. We quote carload lots, Chicago delivery, as follows: Four-inch water pipe, $38.60; six to 12-inch, inclusive, $37.60; 16-inch and upward, $36.60; gas pipe, $1 a ton higher.

Merchant Pipe and Boiler Tubes.—The difficulty to secure mill shipments on new tonnage of merchant pipe has been increased by the withdrawal of the Chicago concerns manufacturing this product. The Youngstown company is taking orders in a limited way. The market is extremely firm on all sizes of pipe, iron and steel. Prompt shipment can only be had from jobbers, and these are asking on the basis of 70 off for ¾ to six inch black steel pipe. Tubes from store are unchanged at 60 off for steel and 47½ for iron and seamless.

Wire Products.—No abatement is noted in the demand for wire materials. Stocks in all parts of the country are low, mills overwhelmed with specifications. The leading interest is three to five weeks behind in deliveries, and is able to lessen the pressure only by pro rating its output and shipping mixed cars to its customers, according as their wants dictate. Prices are without change as follows:

Wire nails, $2.15; painted barb wire, $2.30; galvanized barbed wire, $2.60; smooth annealed wire, $2.30; polished staples, $2.55. Carload lots to retailers, five cents higher; less than carload lots, 15 cents higher.

Coke.—The market on foundry coke continues soft. There is little demand for immediate delivery, and producers are reported to be curtailing their production to strengthen the market. For last half deliveries, Connellsville 72-hour brands are held at a range of $3.30 to $3.40 ovens. Solvay coke for this shipment is firm at an average of $6.50 Chicago.

Old Material.—Very few changes have appeared in scrap values in the current week. Boiler punchings have softened 25 cents a ton; railroad malleable 50 cents and splice bars $1.00 a ton, but not one item on the list has advanced. The market maintains its equilibrium in a period of light demand and plentiful stocks by the increasing number of short sales. We have revised our prices and quote as follows, gross tons being given in the first paragraph:

Old Steel Rails (less than 3 feet)	$17.50 to 18.00
Old Car Wheels	25.00 to 25.25
Old Iron Rails	24.50 to 25.00
Rerolling Rails (3 feet and over)	18.50 to 19.00
Light Section Relayers, 45 lbs. and under, subject to inspection	30.00 to 32.00
Relaying Rails, subject to inspection	28.00 to 30.00
Frogs, Switches and Guards	*16.50 to 17.00
Heavy Melting Steel	15.50 to 16.00
Mixed Country Steel	12.50 to 13.00

We quote net tons as follows:

No. 1 R. R. Wrought	$15.25 to 15.50
No. 2 R. R. Wrought	14.25 to 14.50
Shafting	17.00 to 17.50
Dealers Forge No. 1	12.50 to 13.00
Wrought Pipe and Flues	12.50 to12.75
No. 1 Cast, 150 lbs. and less	18.50 to 19.00
No. 1 Mill	10.00 to 10.50
Mixed Busheling (No. 1 & No. 2)	11.00 to 11.50
Country Sheet	8.50 to 9.00
No. 1 Boilers Cut	11.50 to 12.00
Boiler Punchings	14.75 to 15.25
Cast Borings	9.75 to 10.00
Mixed Borings, etc	9.75 to 10.00
Machine Shop Turnings	11.50 to 12.00
Railroad Malleable	16.00 to 16.50
Agricultural Malleable	15.00 to 15.50
Stove Plate and Light Cast Scrap	15.00 to 15.50
Old Iron Splice Bars	18.50 to 19.00

CLEVELAND.

Pig Iron Prices Advance Rapidly.—Market is Very Strong.

Browning Building, April 30
Office of THE IRON TRADE REVIEW.

Iron Ore.—Ice crushers succeeded in opening a channel in the St. Mary's river, April 24, and the large fleet, which had been detained at Detour, passed through the Soo. There is now a very large fleet at the head of the lakes and some vessels will be detained from 10 days to two weeks before they will succeed in getting loaded. A few vessels carrying ore have arrived from the head of the lakes at lower lake ports, but the April movement will be very small compared with that of April, 1906.

Pig Iron.—The pig iron market has developed surprising strength. Heavy sales made recently have resulted in a general advance in quotations, and all indications are that there will be a scarcity of both foundry and steel-making pig irons. The Sloss-Sheffield Steel & Iron Co., which had been selling for last half delivery at $19 for No. 2 Birmingham, has advanced to $20, and other interests are asking $19.50. Some companies are still willing to take business at $19, but agents are required to submit inquiries to the companies before accepting orders. In the valleys the minimum quotation for No. 2 foundry is now $22.50, and a more general quotation is $23. The quotation for No. 2 foundry at Cleveland for the last half has been advanced to $23. None of the furnaces in Ohio have any large tonnage for sale this year. Some are sold up to Jan. 1, 1908. A few contracts have been made for delivery during the first quarter of 1908. In some cases the high quotations are named by interests having very little iron for sale. There is a strong feeling that the market is advancing too fast, and conservative interests hope that it can be checked. We quote, f. o. b. Cleveland, for last half delivery as follows:

Bessemer	$ 23.85
No. 1 Foundry	23.50
No. 2 Foundry	23.00
No. 3 Foundry	22.50
No. 2 Southern	23.85
Gray Forge	22.00

Coke.—The coke market has changed but little during the past week, and there is increasing confidence that prices will be higher. For spot delivery, furnace coke can be purchased at $2.50 to $2.60 at the ovens, but for last half delivery prices are about 40 cents higher. Foundry coke for spot shipment is sold at $3.40.

Finished Material.—Deliveries do not show any improvement, but are rather worse on plates. Bar iron continues to show some weakness, especially in Indiana, where mills are making low quotations for shipment in their immediate territory.

Old Material.—The market is in a listless state. Dealers are exhibiting no willingness to sacrifice and apparently are not anxious to sell unless at what they regard as reasonable figures, but those sales made have been at the mills' prices. Turnings and borings, which had been holding up well, are considerably weaker. Wrought scrap is the weakest feature of the market, and dealers are having some difficulty to dispose of present stocks. Predictions are made that the end of the decline has not yet been reached. The Nickel Plate railroad has closed a small lot. We have revised our quotations, and quote f. o. b. Cleveland, gross tons, as follows:

Old iron rails	$24.00 to 25.00
Old steel rails (re-rolling)	17.00 to 18.00
Old steel rails (under 6 feet)	18.50 to 19.50
Old car wheels	23.00 to 23.50
Steel boiler plate	14.00 to 14.50
Steel axles	21.50 to 22.50
Malleable iron (railroad)	18.00 to 18.50
Malleable iron (agricultural)	16.50 to 17.00
Heavy steel	16.00 to 16.50
Country mixed steel	14.50 to 15.00
Low phosphorus	21.50 to 22.50

We quote net tons as follows:

No. 1 R. R. wrought	$16.50 to 17.00
No. 1 busheling	14.50 to 15.00
No. 1 machine cast	17.50 to 18.50
Iron axles	25.00 to 25.50
Axle turnings	13.00 to 13.50
Wrought turnings (free from cast)	12.25 to 12.75
Grate bars	14.00 to 15.00
Pipes and flues	13.50 to 14.00
Tank iron	12.00 to 13.00
Hoop and band iron	8.50 to 9.00
Sheet iron	7.50 to 8.50
Wrought drillings	12.25 to 12.75
Stove plate	14.00 to 15.00
Cast borings	10.50 to 11.00

CINCINNATI.

Market Approaches Runaway Condition.—Prices are Advanced.

(Special Telegram.)

Cincinnati, April 30.—A decided change has taken place in the pig iron market. The $18.50 Birmingham price has disappeared, and the Sloss-Sheffield Steel & Iron Co. quotes $20 for last half. Tennessee and Republic interests are practically out of the market and all business must be submitted to Birmingham. The five furnaces of the Southern Steel Co. are practically out of the market for third quarter and quote $19 for last quarter. A Virginia interest has put up the price on eastern shipments $1 per ton and refuses business at a concession. Some of the leading agencies have very little iron to sell. The Cleveland Furnace Co. has withdrawn all quotations in this territory. There is heavy inquiry and buyers are finding it difficult to get the iron they want, as many furnaces are not able to quote in accordance with specifications submitted. Spot iron is weaker. Sales are being made at $21 for spot and second quarter. The market is almost at a runaway condition, and there may be considerable excitement before the week is past.

(By Mail.)

Pig Iron.—The general market has been more active and there is a stronger feeling prevailing than a week ago. Deliveries on contracts are good, and the spot market has weakened under lack of demand. Prompt delivery iron is now obtainable at $21.00 Birmingham, with $1.00 difference between the grades. We quote spot iron delivered Cincinnati, as follows:

Southern foundry No. 1	$24.75 to 25.25
Southern foundry No. 2	24.25 to 24.75
Southern foundry No. 3	23.25 to 23.75
Southern foundry No 4	21.75 to 22.25
Southern No. 1 soft	24.75 to 25.25
Southern No. 2 soft	24.25 to 24.75
Southern gray forge	26.65 to 27.25
Northern No. 1 foundry	26.65 to 27.75
Northern No. 2 foundry	26.15 to 27.15
Northern No. 3 foundry	25.65 to 26.65

For the balance of the second quarter there is not much demand and $21.00 Birmingham is the usual price.

There has been a good scattered inquiry during the week, and quite a good tonnage has been sold. A large manufacturer is in the market for about 5,000 tons mostly for eastern delivery. About 10,000 tons of Bessemer have been sold here this week. There is an inquiry for prices on 2,000 tons of malleable for last quarter delivery from an Ohio manufacturer. Advices from abroad are that foreign iron is advancing under the demand from America and Germany. The low grades such as gray forge and mottled and even No. 4 are dull. Most of the business in these grades is subject to special negotiation and prices are not made with regard to the usual differences between the grades. Southern basic is quotable at $19.50, Birmingham. Some off basic sold at $18.00 Birmingham.

A feature of strength in the general situation is the belief that most of the tonnage booked for last half delivery is legitimate business, and not investment iron. There is said to be less iron in the hands of the middleman now than for some time, so that furnaces will control prices without disturbances from investment stocks for at least the balance of the year. We quote for last half delivery delivered Cincinnati, as follows:

Southern Foundry No. 1	$22.25 to 22.75
Southern Foundry No. 2	21.75 to 22.25
Southern Foundry No. 3	21.25 to 21.75
Southern Foundry No. 4	20.75 to 21.25
Southern Foundry No. 1 soft	22.25 to 22.75
Southern Foundry No. 2 soft	21.75 to 22.25
Gray Forge	19.75 to 20.75
Northern Foundry No. 1	23.15 to 23.65
Northern Foundry No. 2	22.65 to 23.15
Northern Foundry No. 3	22.15 to 22.65
Jackson County Silvery, 8 per cent	30.15 to 31.15

Finished Material.—Jobbers report a good retail demand at the following prices, f. o. b. Cincinnati:

Angles, 3 x 3 and over, 2.15c to 2.25c; beams and channels, 15 inches and under, 2.15c; small angles and architectural channels, 2.10c base; plates ¼ inch and heavier, 2.10c; 3-16 inch, 2.20c; No. 8, 2.20c; sheets (blue annealed) No. 10, 2.30c; No. 12, 2.35c; No. 14, 2.40c; No. 16, 2.50c; box annealed sheets, Nos. 18 and 20, 2.65c; Nos. 22 and 24, 2.75c; Nos. 25 and 26, 2.80c; No. 27, 2.85c; and No. 28, 2.95c. Iron and steel bars, 2.00c base; boiler tubes, 60 per cent off, base; turnbuckles, 45 per cent off; rivets, 3.15c base; cold rolled shafting, 45 per cent off list; steel tire, 2.10c base.

Coke.—The market continues easy in tone and there is not much change in prices. There is a wide range of quotations on Connellsville makes as some brands are firmly held at good strong figures while others are going at easy quotations. Well known brands with high reputation are not being sacrificed. Prices in the leading coke producing districts are as follows, f. o. b. ovens:

Wise County, Va., Furnace Coke, prompt shipment	$2.75 to 2.90 per ton
Wise County, Va., Foundry Coke	3.25 to 3.50 per ton
Pocahontas Furnace Coke, prompt shipment	2.35 to 2.50 per ton
Pocahontas Foundry Coke	3.00 to 3.25 per ton
Connellsville Furnace Coke, prompt shipment	2.75 to 2.90 per ton
Connellsville Foundry Coke	3.25 to 3.75 per ton
New River Foundry Coke, prompt shipment	3.40 to 3.50 per ton
New River Furnace Coke, contract	2.75 to 2.90 per ton

*Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices on the following basis: $1.60 to $1.65 per ton on $9.00 pig iron, plus 17 to 18 per cent of the advance on pig iron above $9.00 Birmingham.

Old Material.—The market is easy and lower with fairly liberal offerings. We quote f. o. b. Cincinnati:

Old No. 1 R. R. wrought net tons	$16.50 to 17.50
Cast machine and f'dy, net tons	17.50 to 18.50
Old iron rails, gross tons	24.50 to 25.50
Old steel rails, gross tons	18.00 to 19.00
Old short lengths, gross tons	19.00 to 20.00
Old iron axles, net tons	26.00 to 26.50
Heavy melting scrap, gross tons	20.00 to 21.00
Stove plate, net tons	14.50 to 15.50
Wrought turnings, net tons	13.50 to 14.00
Cast borings, net tons	11.00 to 11.50
Car wheels, gross tons	23.50 to 24.00

PHILADELPHIA

Pig Iron Extremely Strong—Furnaces Sold Far in Advance.

April 30.

Pig Iron.—The market shows astonishing strength, and, if there was really ever any danger of a slump in prices, well posted observers believe that the crisis is now past and that a high degree of activity is now assured for the rest of 1907. The rush to buy in the Pittsburg district has had its sentimental effect in this territory, but the prevailing optimism is based upon absolutely substantial reasons—large purchases. with an advancing tendency in prices. This was brought out very clearly at the meeting of the Eastern Pig Iron Association in this city last week. The reports of producers showed that the stocks on hand are the smallest ever known and so trifling as to be entirely unworthy of consideration. All furnaces have orders that will keep them going five or six months, and some have sold their capacity for practically the entire year. The output in this territory has been increased by the blowing in yesterday of the big new E furnace of the Bethlehem Steel Co. which has been under construction for about a year and a half. When in full operation, it will have an output of from 500 to 600 tons of basic a day, but for the present it will be run on foundry iron. None of this product will come on the general market, however, but all will be consumed in the big plant. After nearly two months of idleness the Nittany furnace, with a capacity of about 125 tons a day, has again been blown in. Against this may be set the Alburtis furnace, which has just been blown out for repairs. From this it will be seen that there has really been no addition to the available supplies of the district. Among the large sales reported is one of 7,500 tons of basic at $24 for May and June and $23 for the third quarter, and of 3,000 tons of ferro-manganese for interior points at about $70 a ton. Several thousand tons of Middlesboro iron have also been sold, principally in small lots, and the price is held firmly at $21.50. Spot iron is as scarce as ever, and for No. 2X foundry $25.50 to $26.25 is easily obtained, and $27 for No. 1. There has been a large amount of buying for the last half, and as July approaches the tendency is for prices to work up toward the level for spot iron. Prices covering the range of the last half may be quoted about as follows:

No. 1X Foundry	$25.00 to 25.50
No. 2X Foundry	23.75 to 24.50
No. 2 Plain	23.00 to 23.50
Standard Gray Forge	22.25 to 22.75
Basic	23.00 to 23.75
Low Phosphorus	27.00 to 27.50

Finished Material.—There has been no notable feature in the market during the past week, business continuing in large volume and keeping the mills engaged to their full capacity. Steel bars and plates are especially strong. Prices may be quoted as follows: Beams, channels and angles, according to specifications, 1.83½c to 2c; refined iron bars, 1.83½ to 1.88½c; steel bars, 1.83½c to 1.88½c; plates, 2.03½c and 2.08½c.

Old Material. — The market is steady and there was even last week a little advance in steel scrap and old car wheels, but the buying is not heavy, the mills still holding off. Prices may be quoted as follows:

Old steel rails	$19.00 to 19.50
No. 1 steel scrap	18.50 to 19.00
Old steel axles	22.00 to 22.50
Old iron axles	29.00 to 30.00
Old iron rails	25.50 to 26.50
Old car wheels	23.00 to 24.00
Choice scrap R. R. No. 1 wrought	19.75 to 20.25
No. 1 yard scrap	18.00 to 18.50
Machinery Scrap	21.50 to 22.00
Low phosphorus scrap	22.50 to 23.00
Wrought iron pipe	16.00 to 17.00
No. 1 forge fire scrap	16.50 to 17.00
No. 2 forge fire scrap, ordinary	11.50 to 12.00
Wrought turnings	16.50 to 17.00
Axle turnings, heavy	17.00 to 17.50
Cast borings	15.00 to 15.50
Stove plates	17.00 to 17.50

NEW YORK.

Heavy German Buying Causes Advance in British Market.

Office of THE IRON TRADE REVIEW.
Room 1005, No. 90 West St., April 30.

Pig Iron.—Heavy buying for German account has been chiefly responsible for the remarkable strength of the British market during the past week. On Saturday the price of Middlesboro warrants for No. 3 reached 58s 7d. Brokers were loaded with buying commissions, but in some instances took it upon themselves to delay purchases at this figure and a slight recession followed, the price declining to 58s 4d on Monday. The demand continues insistent for both German and American shipment; at Connal's yard in the Middlesboro district, stock declined 17,000 tons net in a week and on April 18 the tonnage was down to 402,000 with fourteen boats waiting for cargo. A considerable lot of British iron has been sold locally on the basis of $21.00, duty paid, but a leading interest is now holding for $21.50. A denial is made, however, that cast iron pipe interests have purchased the heavy tonnages attributed to them in newspaper reports.

In domestic irons there has been extensive selling during the week. In the Buffalo district this has been so heavy that advances have been general, $23.00 now being asked for No. 2 X with malleable at $23.50. Buffalo sales include 12,000 tons to one interest for the third quarter and furnaces are generally sold until Oct. 1. Eastern Pennsylvania producers are holding at $23.00 for third quarter No. 2 X, but there are occasional sales below this figure, one western Pennsylvania furnace entering this district at a considerably lower price. It is understood that the New York Airbrake Co. has placed practically all of its requirements, a large part of the tonnage going to a concern which recently shifted its furnace from basic to foundry iron. In all, its inquiry called for 21,475 tons, of which about 16,000 tons of various analyses is for delivery through the year from May 1, 3,000 tons from June 1 and 2,000 tons from Aug. 1. Southern producers have sold largely at $18.50 Birmingham for No. 2 foundry and in certain instances have been forced to turn down some of the tonnage offered.

In basic iron few consumers have covered ahead of July 1, but there is evidence that a buying movement is approaching. One sale of 5,200 tons for the third quarter is announced and in this instance the furnace was obliged to decline about 1,400 tons additional, as it could not make the delivery. Inquiries are pending for very large tonnages, variously estimated up to 100,000 tons, but price concessions are being sought before placing. We qoute, second half delivery at tidewater, as follows:

Northern Foundry No. 1	$24.00 to 24.50
No. 2 Foundry	23.50 to 24.00
No. 2 Plain	23.00 to 23.50
No. 1 Southern Foundry	22.50 to 23.00
No. 2 Southern Foundry	22.00 to 22.50
No. 3 Southern Foundry	21.50 to 22.00
No. 4 Southern Foundry	21.00 to 22.00

Finished Materials.—Practically all the large steel making concerns have opened their books for 1908 rails and considerable business has already been placed. It is stated that those roads which have announced the tonnage which they will require during the coming year are figuring on purchases quite as heavy as those for the current year. In the case of the Pennsylvania, the reported tonnage of 153,000, however, is about 7,000 tons less than that originally placed for 1907; later purchases will increase this figure materially. As a rule the lines west of Chicago are the first to enter the market; consequently the local demand has not yet assumed large proportions. There is considerable inquiry for export: Argentine Republic is securing prices on 5,000 tons, Mexico on 4,000 and Cuba on 1,500.

A number of belated orders brought the total bookings of the American

Bridge Co. for April up to slightly over 50,000 tons, which is probably about 40 per cent of the entire tonnage let. During the week, this company closed with the Carnegie Steel Co. for about 8,500 tons, of which 7,500 is for a new open-hearth plant. Other bookings by this company include 1,800 tons for a mercantile building in Philadelphia, 3,000 tons for Lake Shore bridges, 1,600 tons for a Baltimore & Ohio viaduct, 700 tons for an approach to the Manhattan bridge, 1,000 tons for the Delaware, Lackawanna and Western, and 1,000 tons for the Herman building in San Francisco. Other interests have taken a number of small contracts and considerable work is pending.

The United States Steel Corporation has purchased a number of small lots of billets for the use of the Carnegie Steel Co., the aggregate tonnage being about 7,000. Reports that the corporation has purchased Bessemer iron during the past week are without foundation. The rumors grew out of the visit to this city of a large Pittsburg producer.

We quote tidewater prices as follows: Angles, 3 to 6 inches x ¼ inch and heavier, 1.84½c; beams, 3 to 15 inches, 1.84½c; tees, 3 x ¼ inch and heavier, 1.89½c; plates, carloads, tank, 1.94½c; marine boiler, 2.24½c; refined iron bars, 1.89½c; soft steel bars, 1.74½c; sheets, No. 28, black, 2.60c.

There is practically no demand for cast iron pipe in the east, though large tonnages are reported as pending for St. Louis, Cincinnati and Los Angeles. The plate demand is only fair.

Old Materials.—The current market is of the hand-to-mouth variety, consumers being unwilling to close for large amounts in the prospect of a nearby decline. The end of the week will witness the sending out of railway lists, which in the market's present state will exert considerable influence. We quote, prices unchanged, as follows:

Old iron rails	$24.50 to 25.50
Old steel rails, long lengths	18.00 to 18.50
Old steel rails, short pieces	16.25 to 16.75
Relaying rails	28.00 to 29.00
Old car wheels	24.00 to 24.50
Old iron car axles	28.50 to 29.50
Old steel car axles	21.00 to 21.50
Heavy melting steel scrap	16.00 to 16.50
No. 1 railroad wrought scrap	19.00 to 19.50
Iron track scrap	17.50 to 18.00
Wrought pipe	14.50 to 15.00
Cast borings	13.50 to 14.00
Wrought turnings	14.75 to 15.25
Heavy cast scrap	19.00 to 19.50
Railroad malleable	17.00 to 18.00
Agricultural malleable	14.50 to 15.00
Stove plate	15.50 to 16.00
Grate bars	14.50 to 15.00

BUFFALO

Pig Iron Market Much Stronger and Supply is Limited.

April 29.

Pig Iron.—Unusually heavy buying has been the leading feature of the market for the past week, and today it was announced that very little iron would be available for delivery prior to Oct. 1 for less than $26, this price being made to cover the little prompt iron which may be available during the next few months. This is a somewhat radical change in the situation over preceding weeks, but it is the outcome which has been predicted for several months past by the conservative interests of the Buffalo district. There was a feeling all along that the strong tone of the market, the firm prices which prevailed, and the urgent demand for iron which could not be had would, sooner or later, result in higher prices and a scarcity of iron for the remainder of the year.

The shift in local market conditions comes as a disappointment to many consumers who had leaned for their information on bearish reports of the iron market, and many of those who had held off believing that they would be able to secure iron about as they wanted it came into the market today only to find that their needs could not be cared for at present, and to them it looked very much as though they would be obliged to pick up odd lots of prompt iron somewhere in order to carry them over, and they learned, too, of a rather alarming condition for the last few months of the present year, for all reports here indicate that the year's output is almost entirely covered. Inquiries are still numerous. Possibly no better indication of the urgent need of iron is observed in the Buffalo district than the simple fact that consumers of other localities send in duplicate inquiries showing that they are sending their inquiries broadcast in hopes of finding some iron which has not been sold.

For fourth quarter delivery we quote as follows:

No. 1X Foundry	$23.75 to 24.00
No. 2X Foundry	23.00 to 23.50
No. 3 Foundry	22.75 to 23.00
No. 2 Plain	22.50 to 23.00
Malleable Bessemer	23.00 to 23.50
Gray Forge	22.00 to 22.50
Charcoal	27.00 to 27.50

ST. LOUIS.

Pig Iron Market Stronger.—Demand for Scrap Improves.

April 29.

Pig Iron.—The market last week was strengthened both for immediate and future shipments. There is little if any iron to be had at $19 for No. 2 Birmingham for third quarter delivery. The market for the last quarter seems to be $19. Many inquiries for iron are coming in for third and last quarter shipments and usually result in orders. Our quotations for last quarter, including the freight rate of $3.75 from Birmingham range as follows:

Southern No. 1	$23.00 to 23.50
Southern No. 2	22.75 to 23.00
Southern No. 3	22.00 to 22.50
Southern No. 4	21.50 to 22.00
Gray Forge	19.75 to 20.25

Coke.—The market is about the same as last report. Although there is no substantial indication of an advance, many buyers have covered their requirement for the year's balance, and some for a year. Prices for the best selected Connellsville 72-hour foundry range from $3.25 to $3.50 for immediate and future shipments. Connellsville 48 hour furnace coke ranges in price from $2.50 to $2.60. The rate for Connellsville coke, ovens to East St. Louis, is $2.80; to St. Louis, $2.90.

Old Material.—The scrap iron market is strong and the demand covering the last week was better than for the two weeks previous. There is a strong inclination to buy. Prices range as follows, gross tons:

Old Iron Rails	23.00 to 23.50
Old Steel Rails, 3 feet and over	17.00
Old Steel Rails, less than 3 feet	16.50
Relaying Rails	31.00 to 32.00
Old Car Wheels	22.50 to 23.00
Heavy Melting Steel	16.00
Mixed Steel	14.00
Iron Angle Bars	17.50 to 18.00
Iron Car Axles	24.50 to 25.00
Steel Axles	19.50 to 20.00
No. 1 R. R. Wrought	16.00 to 16.50
No. 2 R. R. Wrought	15.00 to 15.50
Locomotive Tires	16.00 to 16.50
No. 1 Dealers' Forge	12.00 to 12.50
No. 1 Busheling	12.50 to 13.00
No. 2 Busheling	11.50
Turnings	12.50 to 13.00
Borings	8.50 to 8.75
Cast Scrap	16.50 to 17.00
Stove Plate	12.50
R. R. Malleable	14.50 to 15.00
Agricultural Malleable	13.50 to 14.00

BRITISH IRON MARKET.

Pig Iron Reports are Cheerful.—Stocks Being Reduced.

Office of THE IRON TRADE REVIEW.
Prince's Chambers, Corporation St.
Birmingham, Eng., April 19

The reports of the pig iron market this week are wholly cheerful. The quarterly meeting last week both in the north of England and the midlands, constituted a fairly crucial test of the position. The meeting left all the markets in a condition of buoyancy. This is especially the case in Cleveland, where prices have touched £2 15s 6d ($13.58) for cash. They have gone back slightly within the last couple of days, but yesterday's figure was £2 14s 9d ($13.40) with £2 15s 1d ($13.48) one month. The demand at present is very strong, and it is becoming a very common experience on Tees-side for ships to wait for cargoes. In the midlands most people who are wanting pig iron have thought it prudent to make fresh contracts, and this position has been emphasized during the three or four days that have elapsed since the meeting. Actual ad-

vances have been unusual here, but pig iron shows great firmness. In only one case, it is reported that Derbyshire iron has been selling at £2 16s ($13.70). The explanation of this is not very easy to see, and sellers as a rule get £2 18s 6d ($14.32). The latest report published with regard to Connal's stores is for Saturday last, the tonnage being 428,139 tons. At present the reduction in stocks is progressing at the rate of about 2,000 tons a day. The official report just issued for the first quarter of the year shows the average selling price to have been £2 15s 2.23d which is the highest for any quarter since 1900, and is 1s 9.77d above the last quarter of 1906. At present, American buying is very extensive, extending up to midsummer, and the sales would have been larger if the metal could have been supplied. A noteworthy improvement is in the demand for hematite, in which the stores on the west coast were reduced from 60,798 tons on Friday to 54,232 on Saturday. In this line there has been an increase from £3 11s 3d on April 5 to £3 13s 5d today.

METAL MARKET.

NEW YORK.

April 30.

Copper.—While the tone of the market is slightly stronger than a week ago, business is still exceedingly light and the level of actual prices remains practically unchanged. Consumers as a rule have not yet covered their requirements ahead of the first half, yet they are manifesting no anxiety and current purchases are only for nearby shipment. We quote as follows: Lake, 25c to 25½c; electrolytic, 24c to 24½c; casting, 22c to 23c. The foreign market is active and higher, London closing yesterday at £103 15s for spot and £102 for futures.

Pig Tin.—Owing to the fact that consumers have allowed their stores to become exceedingly low, a stronger tone prevails with prices generally on a higher level. For spot and May delivery the range is from 41.75c to 42.25c. The London market has advanced sharply, closing yesterday at £194 for spot, and £191 5s for futures. April arrivals have been slightly less than 2,800 tons, but some 1,800 tons is afloat and today's arrivals will raise the total to above 3,000 tons.

Pig Lead.—The market continues quiet and without change on the level of 6.00c, New York, and 5.92½c, St. Louis. Soft Spanish is higher, closing yesterday in London at £20.

Spelter.—The withholding of purchasers has brought about slight recessions, current quotations being 6.60c to 6.65c, according to delivery in New York, with St. Louis holding at 6.40c to 6.50c. G. M. B. closed yesterday in London at £25 17s 6d.

Antimony.—We quote: Cookson's, 23c to 24c; Hallett's, 19c to 20c; ordinary brands, 17c to 18c.

CHICAGO.

April 29.

In spite of the continued dullness of the metal market, only one change in price, and that an advance, was apparent during the week. Pig tin advanced a full cent. Buying in all metals continued slow. Dealers expressed the opinion that the sluggishness would not produce a fall in prices as the large buyers would soon be compelled to come into the market.

Copper Lake sold for 26c and casting between 25½c and 26c. Pig tin advanced from 43c and 43½c to 44c and 44½c. Sheet zinc was quoted at 8.50c La Salle in car load lots of 600-pound casks. Spelter sold at 7¼c. Lead desilverized, sold between 6.50c and 6.60c, and corroding between 7.25c and 7.35c in 50-ton lots. In car load lots the price was 2½c per 100 pounds more. Cookson's antimony sold at 28½c and other grades at 26c.

The market in second hand metals was steadier and a larger volume of business was handled. No changes in prices were noted.

Buyers' prices quoted were: Copper wire, 19c to 19.50c, heavy copper, 19c; copper bottoms, 18c; copper clips, 18.-50c to 19c; red brass heavy, 18c; yellow brass, heavy, 15c to 15.50c; red brass, borings, 15.50c to 16c, yellow brass, borings, 14c to 14.50c; light brass, 13c; pipe lead, 5.25c; tea lead, 5c; zinc, 5c; tin foil, 32c; pewter No. 1, 27c.

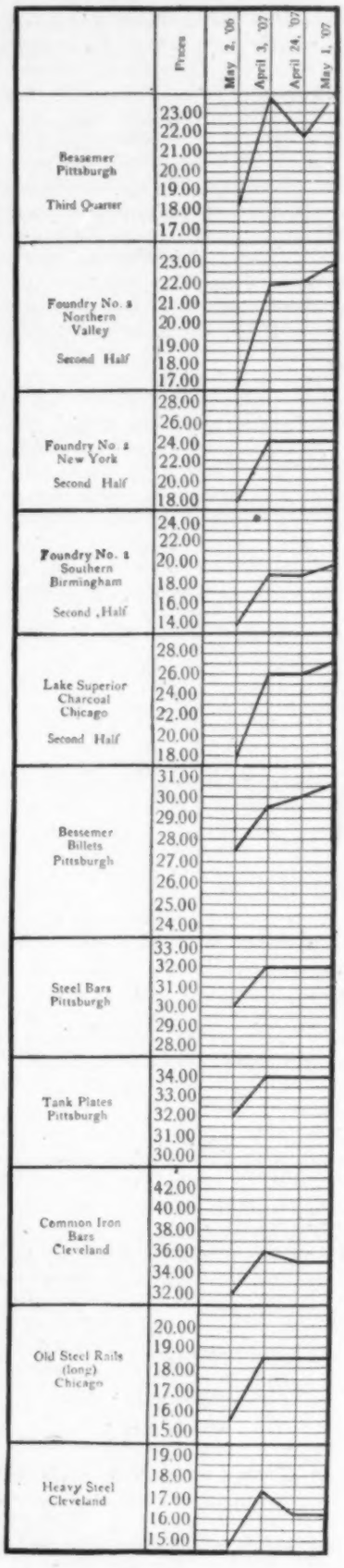
ST. LOUIS.

April 29.

Zinc sold for $53 a ton during the last week on an assay basis of $49 per ton for 60 per cent ore. This represents a decline of several dollars from the prices which prevailed the previous week, but an increase of $7 over the price paid for the corresponding week of last year. The highest price paid for lead was $82 a ton, a slight decline from the previous week's price. The total shipments for the four months of this year exceed in value the production for the same period of last year by $562,395.

The Swan Engine Co., 140 West Lake street, Chicago, manufacturer of engines and equipments, will move in May to 2339 State.

PRICE CHART.


Prices
May 2, '06
April 3, '07
April 24, '07
May 1, '07
Bessemer Pittsburgh Third Quarter
23.00 22.00 21.00 20.00 19.00 18.00 17.00
Foundry No. 2 Northern Valley Second Half
23.00 22.00 21.00 20.00 19.00 18.00 17.00
Foundry No. 2 New York Second Half
28.00 26.00 24.00 22.00 20.00 18.00
Foundry No. 2 Southern Birmingham Second Half
24.00 22.00 20.00 18.00 16.00 14.00
Lake Superior Charcoal Chicago Second Half
28.00 26.00 24.00 22.00 20.00 18.00
Bessemer Billets Pittsburgh
31.00 30.00 29.00 28.00 27.00 26.00 25.00 24.00
Steel Bars Pittsburgh
33.00 32.00 31.00 30.00 29.00 28.00
Tank Plates Pittsburgh
34.00 33.00 32.00 31.00 30.00
Common Iron Bars Cleveland
42.00 40.00 38.00 36.00 34.00 32.00
Old Steel Rails (long) Chicago
20.00 19.00 18.00 17.00 16.00 15.00
Heavy Steel Cleveland
19.00 18.00 17.00 16.00 15.00

HOUSEWARMING

AT THE NEW HOME OF THE ENGINEERS CLUB.

Handsome Structure Formally Opened by a Reception.—Elegant Finish and Complete Appointments of the Structure.

The palatial new home of the Engineers Club of New York was formally opened on the evening of Thursday, April 25, with a reception and housewarming attended by about twelve hundred members and guests, among whom were representatives of more than a dozen foreign societies. The handsome parlors, corridors and halls of the new structure were crowded all the evening and the club was in receipt of numerous congratulations on the completeness and beauty of its home. The old house at 374 Fifth Avenue, occupied for the past ten years was vacated Thursday morning, when breakfast was served for the last time. The club is now about twenty years old; its membership is in the neighborhood of 1,750, with a long waiting list. T. C. Martin is president.

The new club house is located on West Fortieth street, just through the block from the United Engineering building, with which it is connected by a small courtway on the ground floor and a covered bridge furnishing easy access from the latter building to the breakfast rooms of the club on the tenth floor. The building faces upon Bryant Park and public library now nearing completion. It occupies a plot 50 by 100 feet, purchased by the Engineers Club, and was erected with the $450,300 set aside for this purpose from the $1,500,000 given by Andrew Carnegie to the cause of engineering. In addition the club members raised about $175,000, besides paying $220,000 for the site.

The building, of a simple, classic design, is extremely rich and handsome in appearance. The three lower floors, the balcony on the eleventh floor and the marble balustrade and cornice at the top are of white marble, while warmth is given to the structure by the use in middle stories—which are devoted to rooming purposes—of Dutch red brick with a frame of white marble quoins up the sides and marble sills, lintels and architraves about the windows. Four heavy Corinthian columns reach from the massive base of the first story to the fourth story, enframing the windows of those floors devoted to the cafe, club offices, clubrooms, billiard, committee and club rooms and supporting a rich entablature.

The first floor of the building contains a well arranged foyer, leading off of which are rooms for the reception of strangers, for writing, checking of coats and for office purposes. Midway back is a massive staircase leading to the second and third stories. Directly opposite elevator facilities are provided, as well as a bar, cigar stands, etc. At the rear is a cafe, with a grille. The entire front of the second story is given up to a commodious clubroom, and the roomy library occupies the entire rear. Between is a large hallway, from which service from the bar on the first floor is obtainable through an electric dumbwaiter. On the third floor the space immediately over the clubroom is taken up by a billiard room accommodating six tables, with a raised platform running around the room for the convenience of spectators. Three large rooms at the rear are set aside for cards, for the house committee and for the board of governors. The billiard and club rooms are both provided with an open ornamental fireplace at either end.

The six middle stories are entirely given over to bedrooms, sixteen in all. These floors are so planned that the rooms can be used singly or en suite, a bath being connected with each room or available for it, and in addition a general bath and toilet room is provided for common use. The tenth and eleventh floors provide dining accommodations. On the tenth two large private dining rooms occupy the front, with a reception, lobby and toilet rooms immediately at the rear. The feature of the floor is a long, handsome breakfast room, where meals before the noon lunch are served. Ample provision is also made on this floor for securing prompt and efficient service. Entrance to the breakfast room is from a long corridor fronting the elevators. A banquet hall, or main dining room accommodating three hundred guests, is on the eleventh floor. This is extremely finely finished and well arranged, with a balcony corridor thrown across the eastern corridor to facilitate service to the front of the room and a musicians' gallery for use on state occasions. The twelfth floor is taken up by the kitchen and other service rooms. About half the roof is reserved for an open roof garden for use during the summer and there is also a covered roof garden. The basement and sub-basement accommodate the heating, lighting, ventilating and refrigerating plants, the general toilet, barber shop, steward's office, locker room and wine room. The building was planned by Whitfield and King, architects of New York. In a landing on the main stairway is hung a fine oil painting of Andrew Carnegie in a characteristic attitude. A painting of John Fritz is hung in the library.

BOUNTY LEGISLATION

For Iron and Steel Industry Passed by Canadian Parliament.

(Special Correspondence.)

Toronto, Canada, April 26.—The bill providing for the extension of bounties on iron and steel until 1909, and giving bounties for four years on iron and steel produced by electric smelting, the details of which have previously been given, was passed by the Canadian parliament this week. In urging the adoption of the measure, Hon. W. S. Fielding, finance minister, said there was an erroneous impression current that the protection accorded to the iron and steel industry was excessive, in correction of which he would give some figures. He stated the duty on pig iron at the average price of $16 per ton was only 9½ per cent under the British preference, and 15½ per cent under the general tariff. The duty on steel billets at $24 per ton was 6¼ per cent under the preferential, and 10½ per cent under the general tariff. Taking duty and bounty together, the total protection would be, on pig iron, duty $1.50 and bounty $1.10 per ton; in all, $2.60, or 16 per cent on the value under the preference, and 22½ per cent under the general tariff; and on steel billets, duty $1.50, pig iron bounty, $1.10, and steel bounty, $1.65, totaling $4.25 per ton, or 17¾ per cent. under the preferential, and 22 per cent under the general tariff.

Launch William B. Davock.—The bulk freighter William B. Davock, building for the Vulcan Steamship Co., and named after that concern's president and manager, was launched at the St. Clair yard of the Great Lakes Engineering Works, Detroit, April 25. Miss Grace E. Davock of Cleveland, daughter of William B. Davock, in whose honor the boat was named, acted as sponsor. The new boat is 440 feet over all, 420 feet keel, 52 feet beam and 28 feet deep. It will carry about 7,500 gross tons. The freighter will go into commission about June 1.

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May 2, 1907

MR. INGALLS' SPEECH.

THE IRON TRADE REVIEW earnestly hopes that all of its readers will carefully peruse the able address delivered by Hon. M. E. Ingalls at the banquet of the Traffic Club of Pittsburg published in full in this issue. When a syndicate formed to float 4 per cent debentures of such a railroad as the Lake Shore & Michigan Southern is unable to sell a large portion of the bonds, and when other railroads of high credit find it extremely difficult to borrow money, it is time thoughtfully to consider the effect of the present agitation upon the railway interests. On the other hand, it can not for a moment be doubted that the people of the country are suffering very grevious wrongs in shipping freight and that they will never be satisfied until these wrongs are righted. At a time when it is a matter of the utmost importance for every man, whether he be connected with railroads or with shipping interests, to act justly and use his influence in the very best way possible, Mr. Ingalls has done the country an important service in discussing fully, frankly and courageously the foremost issue of the day—the regulation of railways. It is not by following the extreme conservative or the unreasonable radical that better conditions can be brought about, but by giving due consideration to the utterances of men of the type of Mr. Ingalls.

IS REPRESENTATION WITHOUT ORGANIZATION POSSIBLE?

We have received a letter from Hon. Oscar S. Straus, Secretary of the Department of Commerce and Labor, in which, by way of answering the criticisms contained in an editorial entitled "Forgotten Millions," published in THE IRON TRADE REVIEW of April 4, he encloses a copy of a letter written by him on March 30 to the president of the Columbus Iron & Steel Co., Columbus, O., which is as follows:

DEPARTMENT OF COMMERCE AND LABOR, OFFICE OF THE SECRETARY, WASHINGTON.

March 30, 1907.

DEAR SIR:—I beg to acknowledge the receipt of your favor of the 28th instant, asking that two of the labor representatives provided for under the act for the incorporation of the Industrial Peace Foundation be taken from the ranks of unorganized labor. You will probably observe that the Trustees met on the 28th instant, and selected the nine members of the committee—three representing capital, three representing labor, and three representing the general public. The suggestion that you propound had our most careful consideration, and this is not the first time that the subject has presented itself to me, for in the organization of the National Civic Federation, of which I happened to be chairman at the time, the same subject came under serious consideration. It was found that the only way to represent unorganized labor was through the group representing the general public. How, otherwise, is it possible to get a representative from a body which has no organization from which to make a selection? It would simply have to be an arbitrary choice on the part of those who make the selection, and this consideration, together with others, had much to do in dividing the representation into three groups—labor, employers, and the general public. The last may certainly be relied upon to represent all labor. It also occurred to me, and to others, in considering this subject, that as soon as any effort was made to have unorganized labor come together in order to appoint representatives we were thereby stimulating unorganized labor to become organized, and this would naturally be resented by persons who are opposed to organized labor.

Very truly yours,
OSCAR S. STRAUS,
Secretary.

Mr. J. G. Battelle,
President, Columbus Iron & Steel Co.,
Columbus, Ohio.

It seems to us rather remarkable for the honorable secretary to take the position that the only wise and practical method of selecting members of the committee on industrial peace is to appoint representatives of organized labor. We are of the opinion that organized labor ought to be represented, and we are just as strongly of the opinion that unorganized labor is entitled to representation. Sometimes, it is true that it is more convenient and satisfactory to appoint representatives of organizations, and in our issue of March 28 we suggested the advisability of appointing to membership on the committee presidents or ex-presidents of great business organizations, but Mr. Strauss and his associates, in appointing the representatives of capital, did not follow this suggestion. Instead of appointing the presidents or ex-presidents of such organizations as the National Founders' Association, the National Metal Trades Association, or the National Association of Manufacturers, three men who have not been prominently connected with such organizations were selected to represent the employers, but when the selection of representatives of employes was made, three union men were named. We believe it would not have been a difficult matter to obtain one or two non-union men whose integrity and ability could not have been questioned to serve on this committee. Some of the most important industries of the country are entirely without union employes, and there are several million farmers among whom the appointing committee might have found at least one who would have proved a valuable member of the industrial committee. The three gentlemen selected to represent the public, Archbishop Ireland, Marcus N. Marks and Ralph N. Easley, are not objectionable in any way as representatives of the general public, but they are in no sense representative of non-union labor.

Concerning the last point made by Secretary Straus that the appointment of a non-union man might stimulate unorganized labor to become organized, we do not believe it is well founded, because it is based on the false premise that in order to obtain representation on an appointive board or committee or to office there must be organization. If that were true, only union men could hope to obtain any appointive office.

The agitation in favor of the appointment of a non-union man failed this time, and we believe the failure was due,

to a large extent, to the shortness of the time and the lack of definite, positive action on the part of many who favor non-union representation. The agitation has, however, done some good in calling attention to the fact that non-union men, although they may have no organization, are entitled to representation on committees intrusted with the duty of adjusting affairs relating to the welfare of non-union as well as union workingmen.

THE AMALGAMATED ASSOCIATION CONVENTION.

It would show an unwarranted belief that the Amalgamated Association of Iron, Steel and Tin Workers is departing from the policy shown by its recent actions to expect that it will take any action at the forthcoming annual convention in Toledo Monday next, which will be productive of industrial strife. The association has shown commendable moderation in its demands upon the manufacturers. The chief change which has been made in its scales in the past few years has been the elimination of the output limit in sheets and tin plates, which was as wise for the workmen as it was advantageous to the manufacturers. Then there was the reduction in wages in these scales in the spring of 1904, which the men accepted under the almost unprecedented condition that it was demanded at a time when the scale which had been signed had several months to run.

Indeed, the association's moderation in the past few years seems to be the chief reason it is this year confronted with a rival body in the puddling branch. A new organization was formed a few weeks ago in the Pittsburg district, which has appropriated the name of the Sons of Vulcan, a body which joined the Amalgamated Association more than a quarter of a century ago. The Sons of Vulcan, as now constituted, comprises chiefly puddlers in the Pittsburg district proper, a few of its members being recent seceders from the Amalgamated Association, while the majority are men who have had no membership in an active labor organization for years. Just what the new body expects to accomplish is not altogether clear. It has no platform from which the outsider can extract a clear *raison d'etre*. It would appear that its dissatisfaction—or perhaps disgust—with the Amalgamated Association is due to there not having been enough strikes in its branch of the iron and steel trade. The puddlers of the Pittsburg district pay dues, and are not ordered out on strike. The funds have been used to prosecute a strike for many months, only settled early this year, for recognition of puddlers in the east, and to prosecute various strikes and lockouts at detached points in the sheet and tin plate branches. If the seceding puddlers are disgruntled because they have paid their moderate dues and have not participated in the very meager strike benefits which the rules of the Amalgamated Association allow, they are men who are very hard to please. If those men who have joined the new association, and were not members of the Amalgamated Association, staid out of the old organization because it accomplished its work without serious friction with the employers, they are men who are still harder to please.

The attitude which the Toledo convention will assume as a result of the formation of the Sons of Vulcan cannot be predicted with certainty. If the convention follows the lead of the officials, and it is presumable that it will, a decision will be reached that the Amalgamated Association continue to manage its own affairs for its own members to the best advantage, as shown by the light of recent scale settlements.

The formation of the Sons of Vulcan was a mistake. It is extremely doubtful that the manufacturers will accord it any recognition, irrespective of what scale it may present. Never before in the history of iron making and rolling has there been more need for wise, conservative and far seeing action on the part of the men. Puddling is not necessarily a decadent or decaying industry. In late years the tonnage of wrought iron produced by boiling, bushelling and otherwise utilizing old material has been increasing but the men's work is to be subject to keen competition from two distinct sources. The mechanical puddler will be heard from more and more, while in the utilization of old material there is competition from the open-hearth steel furnaces. The line of demarkation between old material which goes to the iron mill to be made into wrought iron, and that which goes to the open-hearth steel furnace, is one which is constantly shifting through the complex operation of market laws. The prices of pig iron, of wrought iron and of steel products are all involved. At one time a certain grade of old material finds its way to the iron mill; at another time it is invited to the open-hearth steel furnace. Market conditions at the present time presage a most earnest invitation to the latter destination. Steel making pig has scored an advance, in the past fortnight, remarkable in many ways. The evidences are that there will be a distinct scarcity throughout the year. The manufacture of open-hearth steel is increasing rapidly. The iron bar market has been relatively weak. Steel bars in the western market are bringing the Pittsburg basis, plus freight, while iron bars are selling at from $3 to $4 a ton less than the Pittsburg basis, plus freight. The buying of scrap by open-hearth steel works in the Pittsburg districts has had much to do with this condition, and with steel making pig iron advancing the iron mill is placed in an uncomfortable position. Its management is in no position to welcome the advent of a new labor organization formed for no purpose than to make greater demands upon it.

Old material is going to come into the market in increasing quantities each year. It is the place of the iron mill operatives to determine whether they wish that material to go through the iron mill or through the open-hearth steel works. It is before them to determine whether they wish to encourage the adoption of a mechanical puddler.

The weakness of the Amalgamated Association has been in the large number of non-union sheet and tin plate mills. That is a weakness which it can do something to correct. An embarrassing fact, which it will be more difficult for it to deal with, is that a larger proportion of the leading interest's sheet mills are non-union than of the independents. It should endeavor to repair its fences in this direction, with no care for the recent defection in the puddling branch. That it will attempt nothing radical is fairly certain. It has had a better example of the advantage of the sliding scale, in sheets and tin plates, than it has ever had before, and should be encouraged thereby.

TWIN CITY FOUNDRYMEN

Hold a Brilliant Banquet Addressed by Distinguished Men.

Under the auspices of the Twin City Foundrymen's Association, a notable banquet was held at the West hotel, Minneapolis, Wednesday evening, April 24, and the guests included representatives of every line of industrial and professional activity in Minneapolis and St. Paul. George M. Gillette acted as toastmaster of the evening, and the principal speakers were: Hon. Charles E. Littlefield, of Maine; Archbishop Ireland and J. A. Emery, national secretary of the Citizens' Industrial Alliance. Congressman Littlefield discussed at some length two bills which he has persistently fought: One the so-called conspiracy bill, which he agreed to report favorably, if the promotors would consent to an amendment that the bill should not apply to any attempt to intimidate by coercion or by overt acts; and the other bill provided that the carrying on or creating of a business shall not constitute a property right. Mr. Littlefield says that the latter measure is nothing more than an attempt to legislate the right to do business out of existence. It means that while a business man could have redress for wrong to his physical property, he was entitled to no protection for that intangible property known as good will. Though this law would enable labor organizations to conspire to deprive the business man of the means of livelihood, their acts would not be restrainable and he could not recover damage. This bill was killed in the last session of congress. Mr. Littlefield said that although labor leaders had fought him in the last campaign, the candidate for governor lost 7 per cent, other congressmen in Maine lost from 5 to 15 per cent, while Mr. Littlefield's loss was but 2 per cent.

In closing his eloquent address, Mr. Emery said:

"It took a Lincoln to take the feeling for the abolition of slavery and for the integrity of the union and put it into concrete form. It took a Roosevelt to take up the public demand for a Panama canal and produce it. It took a Roosevelt to resist the unreasonable demands of labor and say to Gompers: 'Who are you that you would prevent the marriage of the seas?'"

Archbishop Ireland spoke briefly and earnestly upon the importance of religion in solving all the differences of mankind. The radical socialism of the hour is, he said, based upon materialism.

SHIPS ARE NEEDED.

A. P. Cochrane, American manager of the house of Tata & Co., Bombay, India, in an interview published in a Pittsburg newspaper, states that if Pittsburg had a fair chance, she could command a large share of the trade of India, China, Japan and other parts of the earth. "Give us the ships and we will furnish the cargoes," said Mr. Cochrane. "The field is there, but this country is practically fenced out by freight charges. Even with this against us, we have some trade, but not a tithe of what we could have, or might as well have. The people throughout the orient like our products, if indeed they do not prefer them, but they are shrewd traders and count the cost of goods laid down at their places of business. Everybody who wants to export goods to India at present, must pay a freight charge of 17s 6d per ton from New York to its destination. That's merely because the owners of the bottoms know they can gouge American traders, for the published rate from Liverpool to India, which is just about the same length voyage, is only 9s, and shippers, by sending unusually large amounts, or under stress of competition can sometimes get the trip for 7, or even 6 shillings."

LABOR DISPUTES SETTLED.

The National Founders' Association, through its secretary, reports the following adjustments of labor disputes: The union molders and coremakers of St. Louis, who have been demanding an increase of 25 cents per day, have accepted an increase of 15 cents offered by the proprietors, making the new raise now in effect $3.15 per day for floor molders, $3.05 for bench molders and $3.05 for coremakers. The union coremakers of Quincy, Ill., have been granted the 10 per cent increase asked for, making their advanced wages now $2.75 per day. The molders union of Indianapolis has withdrawn its demand for a reduction in hours from 10 to 9, and has accepted an advance of 15 cents per day on the minimum rates which have been as follows: Core molders $3.10, bench molders $2.90, and coremakers $2.60.

Labor Notes.

The officials of the union machinists of Cleveland have announced that they will demand a nine-hour day June 1.

The union iron molders employed at the shipbuilding plant of Moran Bros., Seattle, Wash., walked out recently because a notice was posted by the management to the effect that the open-shop rule would be enforced.

SMALL ORDERS

Are Rule in Machinery Trade.—Chicago Market.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, Chicago, April 30.

"Monotonous prosperity" was the phrase used by a Canal street machine tool dealer to describe the trade condition for the past week. A large number of small orders for one or two machines at a time which are being installed in small shops caused a volume of business which in the aggregate is immense. Large orders are still scarce and railroad lists and demands from large firms are still small. In woodworking machinery the stock depression has not affected the business to the extent it has in the metal-working lines. Several large lists are expected in the next week or two. Second-hand machinery is still in demand.

The recent statements accredited to E. M. Barton, president of the Western Electric Co., in which he deplores the present high price of metals and blames it for the decreased demand in certain lines of equipment which caused his company to lay off between 2,000 and 5,000 men, have aroused considerable discussion among metal men in Chicago during the past week. Large dealers in metals are inclined to give the statement little consideration and declare that his predictions of a fall in the prices are wrong.

"The high prices of copper, steel and lead metals, which we use very largely, makes construction of plants in which our apparatus is used more expensive than at any time for twenty-five years," Mr. Barton said, "our customers have to face probability that the plant put in at the present time could be duplicated within a few years at a greatly reduced outlay."

The head of one large house dealing in railway metals expressed the opinion as follows: "Even with the present slackened demand for metals, the prices are holding up and I can see no reason to expect a drop. I believe the present large demand in all metal lines will continue. In the machinery lines the demand is very large and the increased capacity of the shops because of new equipment will require as much or more material as is now demanded."

No Labor Difficulties.

Little prospects of labor difficulties in the metal or machinery lines exist this spring according to the opinions expressed by men in touch with the situation. Earlier talk of strikes among the machinists has died down and little difficulty is expected over new agreements to be made May 1.

PRESENT STEEL RAIL

Criticised by American Railway Association—Manufacturers Make Reply—Railroad Notes.

Criticism of the present workmanship of the steel rail was embodied in the report of the committee on standard rail and wheel sections which was presented and adopted at the spring meeting of the American Railway Association, held in Chicago, April 23 and 24. The committee reported that following its appointment at the October meeting of the association it had carefully gone into the investigation of the steel rail. Among other things its report declared:

The question of proper specifications for the manufacture of steel rails, which was referred to your committee at the October meeting, has been given careful consideration, and the committee has called to its assistance a number of expert chemists and metallurgists. A subcommittee has been appointed to prepare a draft of proposed specifications to form the basis of a discussion with the steel manufacturers, and when this draft is ready it is the purpose of your committee to take the matter up with all the American makers in an effort to improve the quality of material in steel rails. It is thought that something substantial can be accomplished in this direction if the unanimous approval of the members of the association can be had of the reasonable suggestions of the committee.

The introduction of electric motors of low center of gravity, long, rigid wheel base, and wheels of small diameter no doubt will have an effect on rail wear in the future. The effect on the rail in the London tubes has already caused comment and has led to a suggestion for the appointment of a committee of English engineers to investigate the subject.

The committee signing the report consists of the following: G. L. Peck, general manager Pennsylvania lines west of Pittsburg; J. T. Richards, chief engineer of maintenance of way, Pennsylvania railroad; Julius Kruttschnitt, director of maintenance and operation for the Harriman lines; W. J. Wilgus, vice president New York Central; R. Montfort, consulting engineer Louisville & Nashville road; E. C. Carter, chief engineer Northwestern; William Garsang, superintendent of motive power, Big Four; R. L. Ettinger, consulting engineer Southern Railway; W. E. Fowler, master car builder, Canadian Pacific railway.

The state commissioner of railroads of New York during the week also issued a bulletin in which he declared that the number of broken rails removed from the railroad tracks in the state during January, February and March were greater in number than in the corresponding three months of either of the past two years. The bulletin says:

The unusual number reported during the past winter caused the investigation at this time. The board has found that during the three months ending March 31, 1907, there was a total of 3,014 breakages on the principal steam lines of the state; during the corresponding three months of 1906 there was a total of 826, and during the corresponding three months of 1905 there was a total of 1,331.

President Alva C. Dinkey of the Carnegie Steel Co., in expressing himself on the attack on the steel rail, is quoted as saying:

"The best steel rail that was ever made is being made at the present time. The story from Chicago is absurd. That the best of care is being taken and the best rails turned out in all the mills of the country can be proved to any one who cares to look into it. There was never a time when so small a percentage of wrecks from broken or defective rails was seen as now."

Reciprocal Bill Upheld.

The supreme court of Mississippi has handed down an exhaustive opinion, outlining the rights and powers of the state railroad commission in which it upholds the reciprocal demurrage rule put in effect by the commission in that state. The case was that of the Yazoo & Mississippi Valley railroad against the Keystone Lumber Yards of Yazoo City, and was won by the latter. In passing upon the demurrage rule the court says:

In 20 states reciprocal demurrage measures are pending or have been enacted. Nearly all of the organizations in the country representing large shippers have asked for reciprocal demurrage. It would correct many of the most serious defects from which the country is now suffering. The law of reciprocal demurrage is founded in the soundest common sense and the highest spirit of equity. If such laws are rigorously enforced we will hear no longer of the freight congestion that has been so prevalent throughout the past winter, of many thousands of empty cars standing unused in railroad yards in one section of the country, and coal famine in the other for the want of cars. Reasonable reciprocal demurrage rates justly and impartially enforced will result in a quickened traffic the country over, in a just recognition on the part of the railway corporations of the land, of what they owe in prompt freight schedules, an abundant supply of cars to the public at large, and in an equally just recognition on the part of the public of their duty promptly to unload traffic borne to them in cars and send such empties back to aid in further traffic.

The American car & Foundry Co. has received an order for over 700 cars for the Southern Manchurian Railroad Co., and the cars will be built at the Bloomsburg shops.

PERSONALS.

H. A. McCord has resigned as general manager of the Western Steel Car & Foundry Co., Anniston, Ala.

J. W. McQueen, vice president of the Sloss-Sheffield Steel & Iron Co., was in New York and at other northern points during the past week.

Hugh W. Adams, of New York, sails May 4 for Naples, and in company with his daughter, will spend about four months in travel on the continent.

R. A. Hadfield, chairman of the board and managing director of Hadfield's Steel Foundry Co., Sheffield, England, and past president of the Iron and Steel Institute, is making a visit to the United States.

Fred. Krebs, general sales manager of the Gautier department of the Cambria Steel Co., Johnstown, Pa., will shortly move his headquarters to Philadelphia. The change will take place as soon as Mr. Krebs can arrange his affairs at Johnstown.

Harry Cook, of Bridgeport, O., formerly superintendent of the Etna Standard plant has accepted a position as superintendent of the new sheet mill plant of the La Belle Iron Works, at Steubenville, O. He is succeeded at Etna Standard by William Goodhue.

E. K. Orr, formerly president of the sales corporation of McClernan & Orr, Chicago, has disposed of his interests and resigned. Mr. Orr has acquired a substantial interest in the Brown Bros. Mfg. Co., manufacturer of ornamental iron and bronze work, and has been chosen president of the concern, succeeding the late G. A. Morris.

Charles W. Lutz, superintendent of the Rankin mill of the American Steel & Wire Co., has been appointed superintendent of the Donora plant to succeed August Mann, resigned. Frank W. Nullmeyer, superintendent of the Braddock plant, will succeed Mr. Lutz, and Herbert White, assistant superintendent at Donora, will succeed Mr. Nullmeyer.

J. H. Means, formerly superintendent of the blast furnace department of the Minnequa works of the Colorado Fuel & Iron Co., Pueblo, Colo., has been made assistant manager, to succeed J. A. Durfee, who has resigned to become manager of the Atlanta Steel Co.'s plant at Atlanta, Ga. W. H. Hutton has been selected to fill the place made vacant by Mr. Means. Arthur W. Taylor, of the open-hearth department at Pueblo, will also be connected with the Atlanta concern.

GROSS EARNINGS

Of Tennessee Coal, Iron & Railroad Co. Show Increase—Expenses Greater.

Total gross earnings of $13,265,971, an increase of $2,313,992 over the previous year, are shown by the forty-seventh annual report of the Tennessee Coal, Iron & Railroad Co. for the fiscal year ending Dec. 31, 1906. The operating expenses, however, during the year increased in the sum of $2,044,971, which reduced the net earnings to $2,753,160, an increase of $269,021 over 1905. After deducting depreciation, renewals, etc., there was left a balance of $1,982,483, an increase of $123,434. To this balance from operations was added from other sources, income amounting to $52,828, making the total income for the year $2,035,311. The fixed charges amounted to $949,973 and the dividends to $960,456, leaving the surplus for the year at $126,881. Adding this to the previous surplus, the total surplus of the company Dec. 31, 1906, then stood at $789,397. The income account from operations for the year shows the following:

	1906.	1905.	Increase.
Gross earnings.	$13,265,971	$10,951,979	$2,313,992
Expense—			
Cost of opera'g.	$8,430,505	$6,764,700	$1,674,805
Repairs & main..	1,541,218	1 275,096	266,122
General exp. ..	532,088	428,044	104,044
Total	$10,512,811	$8,467,840	$2,044,971
Net earnings..	$2,753,160	$2,484,139	$269,021
Less depreciation, renewals, etc.	770,677	625,090	145,587
Balance ...	$1,982,483	$1,859,049	$123,434

In his report to stockholders, John A. Topping, chairman of the board of directors, says: "As compared to previous years, your earnings may be favorably regarded, with operating profits in excess of 20 per cent on your volume of business. This result, considering the almost unlimited tonnage of your mineral reserves and their great potential value, should suggest no delay in providing the necessary facilities to meet your income opportunity. Your executive committee, recognizing the inadequacy of your present facilities, has authorized substantial expenditures to increase your volume of business and income, but further expenditures could be advantageously made.

"The physical condition of your mills has been improved by liberal expenditures absorbed in operating expenses. Future operations should benefit by this policy, both as to reduced costs and improved output. The production of rails, billets, steel bars and plates in 1906 amounted to 401,882 gross tons, as compared with 402,318 in 1905, and 155,266 tons in 1904. The modern steel works and rail mills, the construction of which have been authorized, are expected to double the steel output and rail capacity and radically reduce the costs of production. These benefits will not be operative until the last half of 1907. Reconstruction of furnaces along modern lines has been reflected both in costs and by increased production. By July 1, 1907, there will be three modern furnaces in operation and reconstruction methods will then be applied to the remaining stacks of this group. On completion of this work Ensley's pig iron capacity will be doubled. The pig iron production in 1906 was 641,887 gross tons, against 529,036 in 1905, and 475,314 in 1904. Iron ore production last year was 1,483,476 gross tons, against 1,436,282 in 1905, and 1,208,038 in 1904.

"The Potter property acquired by joint purchase with the Republic Iron & Steel Co., it is estimated, adds 40,000,000 tons of high grade red ore to the company's mineral holdings. Additional dolomite or stone reserves have been secured. The introduction of modern coal washers at the mines are expected to increase blast furnace economies. New mines are also being opened. The production of coal in 1906 was 3,007,657 net tons, against 2,231,659 in 1905 and 2,756,300 in 1904. Coke produced amounted to 1,186,872 net tons, against 899,634 in 1905, and 871,532 in 1904."

The unfilled orders now on the books, it is stated, represent the largest tonnage in the history of the company.

OBITUARY.

Patrick J. Geraghty, secretary and treasurer of the Griffin Wheel Co., died at his home in Chicago, April 30, after a six days' illness from pneumonia. He was born in Rochester, N. Y., in November, 1855, and for many years was engaged in that city in the wholesale drug business. He was a son-in-law of Thomas F. Griffin, the founder of the company, but did not become identified with the firm until 1885.

William J. Johnston, well known as a publisher of trade journals, died Sunday, April 28, at his home in New York City after a brief illness. He was born in Ireland, coming to America in early youth. His first venture into the publishing business was the founding of *The Operator*, which name was later changed to *The Electrical World*, as which he published it for a quarter of a century. Later he published the *Engineering and Mining Journal* and at the time of his death was owner of *The American Exporter*.

MACHINISTS' STRIKE

In Pittsburg District — Threatened Strike of Molders Averted.

Pittsburg, Pa., May 1.—The machinists in the Pittsburg dsitrict are on a strike in practically all of the large shops. They are asking 10 per cent advance in wages, a 50-hour week, and 40 cents per hour minimum, which has been refused by the manufacturers and the strike resulted. The principal shops affected are the Frank-Kneeland and McGill Works of the United Engineering & Foundry Co., Mackintosh-Hemphill Co., Fawcus Machine Co., Heyl & Patterson, Mesta Machine Co., H. P. Gazzam Machine Co., Chaplin-Fulton Co., and the Union Foundry & Machine Co.

The threatened strike of 1,500 union molders in the Pittsburg district has been averted, employers granting an increase of 20 cents per day instead of 16 cents as they offered April 22. The new scale calls for minimum rate of wages for molders and core makers, $3.50 and over and an advance of 20 cents per day to men now receiving $3.50 or over and also includes a nine-hour working day, time and one-half for overtime and double time for Sundays and holidays.

SUCCESSFUL EXHIBIT

Given by the Associated Foundry Foremen of Chicago and Vicinity.

An exhibit of foundry supplies and equipment was held in the foundry and pattern shop of the Engineering building of the Lewis Institute, Chicago, Wednesday afternoon and evening, April 24, under the auspices of the Associated Foundry Foremen of Chicago and vicinity. An attendance of nearly 500 foremen and proprietors proclaimed the success of the venture, and plans are already being made for a larger show next year. The foundry was crowded with molding machines, sand shakers, pneumatic tools, core machines, and other appliances of the latest design. Ample power was provided for operating the compressed air and electric tools, as the foundry classes were dismissed for the day. The engineering students also displayed a lively interest in the affair, as the machines exhibited proved novel.

Charles G. Gates, head of the firm of Charles G. Gates & Co., stock brokers, has made formal announcement that the firm will be dissolved June 1. In making the announcement Mr. Gates says he and his father, John W. Gates, intend to retire from active business on Wall street for a year.

STIRRING SPEECH OF A GREAT RAILROAD MAN.

HON. M. E. INGALLS ADDRESSES THE TRAFFIC CLUB OF PITTSBURG.

The Truth About Rebates.—Unwise Opposition of Railroads to Reform Measures.—Accidents and Abuse of Officials.—Future is Bright With Promise.

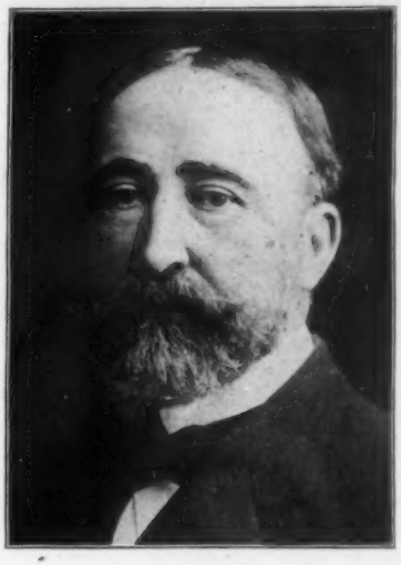
Excepting only the message and speeches of President Roosevelt, the most important contribution which has been made to the discussion of the railroad rate problem was the speech of Hon. M. E. Ingalls, chairman of the board of directors of the Big Four railroad, at the fifth annual banquet of the Traffic Club of Pittsburg, held at the Hotel Schenley, Friday evening, April 26. If any evidence was needed to establish the fact that this club is the most representative organization of its kind in the country, and is doing more than any other club to promote the interests of both shippers and carriers, that evidence was furnished at this banquet. President Terry delivered a strong address on general traffic conditions, and Hon. Charles S. Hamlin of Boston, former assistant secretary of the treasury, and counsel for the Boston Chamber of Commerce, delivered an able address from the standpoint of a constitutional lawyer, urging that for the existence of every civic right or privilege there is also a corresponding duty or obligation and that the need of the hour is less talking of rights and more consideration of duties; but the masterpiece of the evening was the great speech of Mr. Ingalls, dealing fully, frankly, and most forcibly with the transcendent problem of the day—the regulation of the railroads. The toastmaster was Joseph M. Belleville, of the Pittsburg Plate Glass Co.

As on previous similar occasions, the banquet room at Hotel Schenley was elaborately decorated, the general theme being emblematic of the aims and purposes of the Traffic Club. Groups of keys were placed in various parts of the hall, each bearing a significant inscription either of history or prophecy. On the wall behind the speakers was suspended a grille of keys arranged in metal bars and lettered in a manner significant of the history, growth and future of the Pittsburg district. In other parts of the banquet hall were similarly appropriate inscriptions.

The guests of the club, most of whom arrived on the morning of the banquet, were entertained throughout the day by a river ride from Pittsburg to McKeesport on the Monongahela river, guests of Francis J. Robbins, president of the Monongahela River Consolidated Coal & Coke Co., and they were given an opportunity to see for themselves something of the industrial greatness of Pittsburg, returning in time for the banquet.

President Terry's Address.

In opening his address, President Terry referred to the wonderful prosperity in the Pittsburg district, which, he said, produces 65 per cent of the iron and steel of Pennsylvania, and 32 per cent of that of the United States. In the broad lexicon of its captains of industry there is no such word as fail. In the solution of the greatest problems which the people of the country have been called upon to solve,



M. E. INGALLS.

Pittsburg has furnished the key, and as Pittsburg has done so much in solving other problems, so it is doing today in establishing more satisfactory relations between shippers and carriers, between the railways and the people. Mr. Terry expressed regret that the membership of the Interstate Commerce Commission does not include at least one representative of either of the two great interests directly concerned, the shippers and carriers, but he advised cooperation with the commission, and expressed the belief that it would be wise for its members to have associated with them in a conferential capacity a small committee of representatives of shippers and carriers in order to have always available that knowledge of the practical, every-day requirements of those interests which was denied them in the formation of a commission. Mr. Terry declared that the greatest move the shippers and carriers in Pittsburg ever made was when they adopted the principle of conferential adjustment. Long before there was any thought of rate law agitation, the carriers and shippers of Pittsburg consulted on practically all important moves, and are doing so to this day. As a powerful factor in commercial stability, Mr. Terry referred to the purchasing power of the railways, saying:

"Whatever prompted the shortsighted policy of discontinuing repairs to cars as business begins to slow down, leaving them on repair tracks and sidings untouched until resumption of business only to retard that business waiting to get those cars back into service again, beats all calculation; and it is equally as ruinous a policy to cancel orders for new equipment or fail to place new orders for needed equipment the minute business slacks off. The Traffic Club of Pittsburg recommends to the executives of the railroads the adoption of a policy providing in dull times for the busy times. Don't hold up repairs when the car can be best spared for such repairs and then hold up the car for those repairs when it is needed for movement of traffic! Consider the wisdom of buying new equipment and supplies during the slack periods, and thus keep the car plant busy; stimulate the demand for steel; restore waning confidence and above all be ready to take advantage of the prosperity to follow by being quickly in the field with the equipment to move the tonnage and keep it moving."

Mr. Ingalls' Address.

In beginning I wish to say that what I may say this evening is in no spirit of malice, but with charity for all—a plain, unvarnished story of events in which I was interested with many of you, and whatever there may be of criticism of what was done in the years in the past I assume my full responsibility as one of the principal actors in the scene.

In 1815 there was a change in the progress of the world. For centuries previous to then the nations of the earth had been engaged in warfare try-

ing to destroy each other. By the battle in June, 1815, on the plains of Belgium, peace was secured to the world and men had time to turn to the peaceful industries of life and accumulate fortunes and apply their energies to something beside battles and war. As a result, by 1830 the civilized world had recuperated its strength and was ready for an advance. This came in the discovery and initiation of steam railways. Hitherto it had been slow plodding—countries were weak, and shipping and transportation slow and expensive. And then the locomotive was built and put in service and a new era dawned. For more than fifty years from that time, it was one steady advance and progress. Communities were wild to secure a railway—the brightest minds of the country devoted their attention to building them, and the surplus capital of this country, especially, was invested from year to year in developing and perfecting a system of transportation by steam. Situated as this country was, with a wide expanse of territory, railways were not only a blessing, but a necessity. States and towns and people demanded them. Nothing was asked—no favors—but what were granted, if the people could secure thereby a railroad. Lands were given in unlimited quantities; towns, cities and states loaned their credit. The country swarmed with promoters with whom the various communities made contracts to give them rights-of-way; to give them lands; to give them state bonds, county bonds, town bonds, city aid—anything they asked—if they would build them a railway. In very few cases were questions asked as to the rates demanded. No limit was put upon the amount of bonds and stocks that should be sold.

The Selling of Bonds.

The result was, in time the country had a large railway mileage, which had been constructed under this plan. The contractors sold out the bonds and stock at any price that they would bring and the new owners came into control of the railways with an endeavor to earn dividends and interest upon these securities. Then the people saw that they had given away valuable privileges without any limitations, and they began to look around them and see how they could recover some of their lost rights. The result was the Granger legislation, in which the people took the ground that the railways were public corporations; that they were created by the states and subject to the control of the legislatures. On the other hand, the owners and managers claimed that they were like private corporations and could be managed independent of public control. The Granger suits lasted for some years, but in the end the decisions were in favor of the people—that the railways were public institutions and could be controlled by legislation.

At that time investors, especially in the east, were in much greater alarm than today. I remember quite well hearing people talk then who had invested in the stocks and bonds of railways in Illinois, Wisconsin, and other western states, saying that their investment was lost; that they were being ruined by legislation. And yet, after

THE BY-WORD OF SHIPPERS AND TRANSPORTATION INTERESTS AS REPRESENTED AT THE TRAFFIC CLUB DINNER.

the people secured the power they sobered up and the persecution ceased. The corporations made money and there was nothing of the ruin that was threatening.

Secret Contracts.

Until the passage of the Interstate Commerce law in 1886, it was the custom among all railways to make secret contracts selling their transportation to wholesale bidders at the best prices possible, trying thereby to build up the industries of the country and secure returns for their stockholders. It was not considered wrong, but a proper way of conducting business. When competition got too severe, pools were made by which the business was divided and the rates secured.

For fifteen years a contract existed between the lines from Chicago to Indianapolis, Cincinnati, and Louisville for a division of the business, by which in round terms we put in 60 per cent for doing the business and divided up the other 40 on certain terms. The question of a violation of the law never entered our heads, although perhaps it was a violation of the common law, but for fifteen years that pool, so called, existed and saved hundreds and hundreds of thousands of dollars to the railways, and protected the shippers by steady and reasonable rates. There were also many others in different sections of the country.

When the interstate commerce law was passed in 1886, prohibiting pooling, such arrangements were all ended and the railways endeavored to conduct their business by agreement under that law. This went on very well for a year or two, but gradually the competition for business increased. One line would endeavor to get more business and in retaliation another line would pay somewhat more, and the result was that the system of rebates grew into tremendous proportions. Published tariffs were disregarded, and it was a struggle for existence among the different lines.

An Acute Situation.

In 1895 the situation had become so acute that a few of us thought something must be done or the end would be bankruptcy, so we called a meeting of all of the lines north of the Ohio river and east of the Mississippi to discuss the situation and see what could be done.

It was a hot day in July when we met in New York City. There were present the presidents and general managers of all the lines—the ablest representation I have ever seen. All agreed that the situation was deplorable—that the business of the country was being conducted on special rates—that the shippers were dictating any terms they pleased, and that the end was bankruptcy for the entire railway system unless something could be done to stop it.

I quite well remember that the late Mr. George B. Roberts, one of the great railway men of the world, then president of the Pennsylvania Railroad, at this meeting making an address and saying something like this:

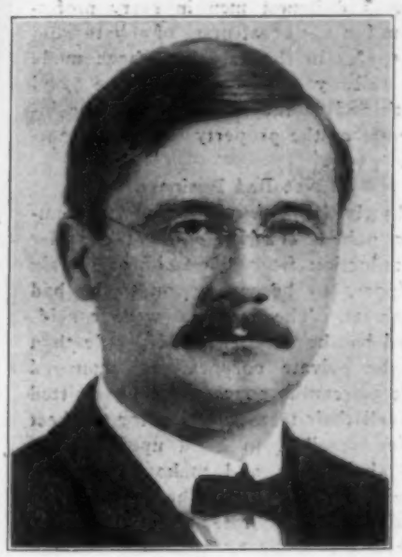
"Gentlemen, as I look around this meeting at the faces of those assembled here, I would trust any of you with my pocketbook, or take your word in any ordinary business transaction, but I would not for five minutes trust anyone, even myself, with an agreement to maintain rates."

True it was, and it was a deplorable situation. A committee was appointed and we endeavored to make some agreement by which we could maintain our tariffs and at the same time comply with the law. We drew what was known as "The Joint Traffic Association Agreement." The thought of our committee, and I speak whereof I know, was all through the long weeks that we struggled with this, to draw an agreement that should comply with the interstate commerce law, and aid the Interstate Commerce Commission

in enforcing the public tariffs. It was never for an instant thought by any of us that there was any danger from the Sherman law, so called. In fact, I had been told by the author of that famous law when it was passed that it did not apply to railways. We made our agreement; we put our machinery in effect, and in the following months we had rates better maintained than they had been for years before.

Brought into Courts.

We were brought into the courts, however, by shippers who were opposed to any maintenance of rates, and to our surprise and disgust, before we were aware of it, the supreme court had decided in a case somewhat similar called the "Trans-Missouri Agreement," that it was in conflict with the Sherman law, and illegal. We asked for a rehearing, but in the spring of 1897 the decision was re-affirmed, and it was practically decided by the highest court in the land that there was no authority or power on the part of the railways to make an agreement for the maintenance of rates.



W. A. Terry,
President Traffic Club.

This fell upon all of us like a bombshell. The question was what to do? My own advice at that time, in which I stood almost alone, was that we should meet the case squarely—say to the government that the railways could not be conducted without some right to make an agreement and that this decision had produced anarchy; that every association should be dissolved and each man should manage his railway in the best manner possible, and use all his influence with congress to secure just and proper legislation that would enable us to conduct our business according to law.

Panic Was Feared.

The answer to that was that it was dangerous—that different rates would be made and panic would be produced and there would be more bankruptcy and more receiverships.

It is a pity that we did not have them then and be done with them.

As no public agreement could be made between the railways, there were various secret arrangements which they tried to keep, but each manager endeavored to secure as much business as possible for his road on the best terms he could make. There was far more business done on secret rebates and contracts than on public tariffs, with a constant shrinkage of rates. Millions and millions of dollars were paid out without a voucher or receipt by traffic managers and solicitors, and to the credit of the fraternity be it said there was never any complaint of a misuse of these funds. In no other business on earth where there have been so many millions handled has there been such a record.

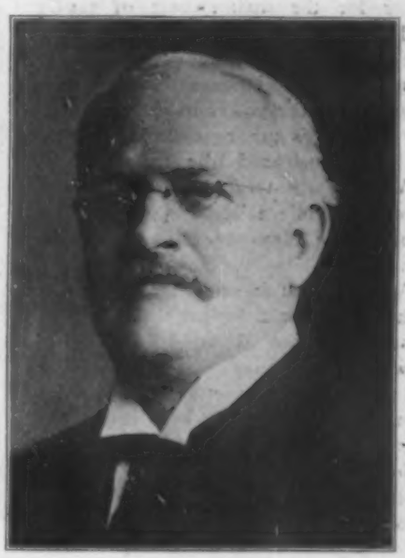
In the meantime, owing to the taxation of railway securities in the different states, the securities of the railways had drifted to Wall street and were controlled by cliques who used them, perhaps, not for the investment so much as for counters in the great game of speculation that they were playing. In 1899 some six or seven of these men, in the hope of swinging the railways and the business of this country, conceived the idea, which was dubbed "The Community of Interests," that they would buy the controlling interest in practically all the railways of the United States, and thereby produce a joint ownership, and through it a maintenance of rates.

If this had been conducted with moderation and the profits from it used to develop the railway line, it might have stood somewhat longer, but after it had been going a short time the chief men got into a struggle among themselves for the control of certain lines, and the skeletons in their closets were laid bare so that the public understood what was being done. Instead of improving their lines, some of them spent a large part of their income and credit in buying other lines and increasing their dividends so that the prices of their stocks could be sold better here and abroad, and all these things caused so much dissatisfaction among people that it finally took form in the celebrated Northern Securities case. If it had not been for that suit, a few men would have controlled the great transportation interests of this country, and while they would have maintained rates, they would have made and unmade statesmen; would have controlled congress and legislatures, and in the end no one knows what the result would have been.

Deals and Subterfuges.

The decision of the courts was against this combination, but instead of accepting the situation, as ought to have been done, and asking for legislation to enable them to go and manage their properties legally, they continued to temporize with various deals and subterfuges to avoid the effect of it.

The people, in the meantime, had been busy trying to obtain greater authority for the Interstate Commerce Commission, and the railways as a whole has been busy opposing this.



J. M. Belleville,
Toastmaster.

In 1899, at a meeting in New York of the principal lines, the question came up of giving the Interstate Commerce Commission more power, and then and there I endeavored to have the railways give up their opposition and join in with the people and get a bill which, while it gave the Interstate Commerce Commission more power, should also give the railways some rights. I received no support whatever. The railways had not then learned that the people were supreme and that they had better bow to the inevitable.

I had the honor in 1897 to deliver an address before one of the western universities, and I cannot help quoting here some of the ideas advanced at that time which are pertinent to the

present time. Among other things I said:

"The railway officials must be taught to conduct their business with care and with due respect to the rights of the people. Their actions must not be secret, but above board and open to the public. There must be but one rate to everybody and that must be reasonable, and the legislatures must provide remedies by which railway officials can agree with each other on these rates and their contracts can be enforced. Unfortunately, railway officials have opposed all legislation that looked to the control of their powers, and have not tried to direct and perfect the laws as they might have done. There should be clear and positive legislation authorizing railways to contract with each other for the maintenance of tariffs and the division of business, and it should be made the duty of the government commissioners, and they should have the power in such cases to see that rates are reasonable."

Considered Idle Talk.

All this was treated by the railway officials as idle talk. I quote this to show these ideas are not new with me.

Again, when in 1905 it was determined to make a further effort to oppose legislation, I tried with what powers of persuasion I had among railway officials in control to induce them to give up their opposition and join with the people and obtain legislation giving certain powers to the Interstate Commerce Commission, and also giving certain rights to the railways. The railways persisted in their old fight and were beaten. Drastic legislation in favor of the people was passed—nothing in favor of the railways.

Unfortunately, just as this legislation was passed, the spirit of reform seized upon certain railway owners and managers and they decided that the custom of giving free transportation and passes to certain officials and certain people had been wrong and should be changed, and that no more passes should be issued. The result was that many public officials, many members of congress, of legislatures, felt for the first time that they had been accepting unwittingly bribes in the past in the shape of the customary pass, and they were angry.

Rebates Must Cease.

The railway officials made up their minds that rebates must cease—that the public had decided that they were illegal and criminal. What was the result? Many of the shippers, who for years had been getting fat upon rebates and who felt that they had an inherent right to receive them forever, found they could not get them, and they were angry—not with the law—but with the railways. Men who had been riding upon free transportation found it denied to them, and they were incensed. And the result is, the railways are prone upon their backs with no friends.

A little before, an investigation had taken place as to the conduct of the life insurance companies in New York, and a system of rottenness and low morals in corporate management had been disclosed, and this added to the flame against corporations; and in the latter part of 1906 and up to the present there never was a great interest that was so weak, so abused and so

KEYS TO THE SITUATION—EMBLEM BEHIND SPEAKER.

helpless as the railway interests. You would think from the speeches that are being made, from the publications, from the magazines and newspapers that the railway managers were men of ill repute—capable of almost every crime—foes of the public; and yet they are the men who have been the chief aids and factors in building up the prosperity of the country. No one dares to raise a voice in their defense. Shippers who have grown fat with rebates turn up their faces in scorn at the railways which have made them rich. The men who have received favors and free transportation are the loudest in preaching reforms and regulation of railways. In fact, I think it is pretty near true what the president says—that he is about the best friend they have.

I have tried to give you a faithful picture of the railways; of their growth from the beginning up to the present time, and the various events which have led up to the present unfortunate condition.

Justified by Conditions.

There have been many things done in the past by railway managers which were wrong, but most of them for which they are so badly condemned were justified by the situation and conditions existing when they were done.

Of course, some rebates and secret contracts were for the purpose of enabling one shipper to crush out a competitor, and this was wrong and cannot be too strongly condemned. Of course, there have been cases where rebates have been given and secret contracts made in which the railway official has been interested. There are always dishonest men in every profession, but the great mass of rebates and contracts in the past have been made by railway officials in absolute good faith and as they believed, for the interests of the property they represented.

Not Bad Business.

In the beginning, you must remember, public sentiment did not consider a reduction from the tariff to certain shippers to be wrong, or to be bad business. The railways were considered by the great mass of people then to be private corporations, managed like mercantile concerns, and permitted to sell their transportation for the best price possible, to build up industries on their lines and make money for their stockholders. The principle of making a less rate with large and wholesale shippers than to a retail dealer was considered strictly in accordance with the lines of trade by commercial men. The law had not been held to be, as it is now, that the railways were public corporations and must be conducted according to rules laid down for such institutions, but it was supposed, as I have said before, that they were private and had the right to conduct their business as private parties. The country was new and every railway manager was striving to build up industries on his line—was striving to get his fair share of business from his competitor. There were very few who could withstand the temptation of securing large and profitable business to his company by a secret contract, which thereby did not destroy his other business and which should protect him against the competition of his competitors. He had to answer in many cases the question of a contract for less rates with a new industry, which, if made secretly, would not break down the rates on the business that he then had, and would

not reduce the rates all along his line. In many cases he was competing with water transportation, and it was a question of protecting his road against water lines, which had no tariffs and made any agreements and rates they pleased. It was also a very serious question with the manager when his cars were west and he needed them east, and they could not be loaded east except with a reduction from the tariff, whether he should not make that reduction. If he made it publicly, his entire rates were reduced, and in some cases at enormous loss, while if he made it secretly, no one suffered. He increased the business of the country and largely the earnings of his railway.

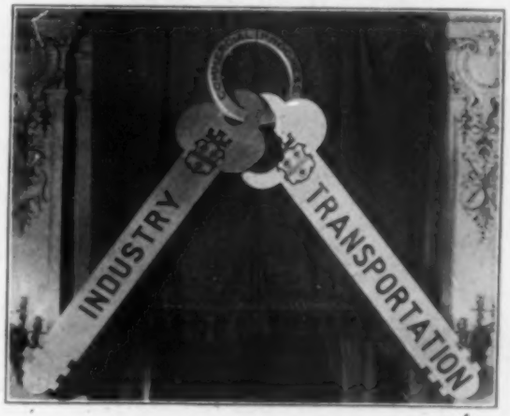
I am giving the reasons which influenced all of us in the years that have gone in making rates and making contracts. Mind you, as I have said, I have no excuse for unfair contracts or rebates, only for those which were made in the sharp competition for business, either between competitors or between different lines of transportation.

No More Rebates.

It has been a long fight—it has been a long time in which public opinion has been getting educated, but as I have stated, the end has come. There are no more secret contracts—no more free transportation.

Now, what of the future? And it is one of the most important questions that the American republic has ever faced. You may abuse the railway men—you may by chance force into bankruptcy railway lines, but you cannot wipe out the great transportation industry, the great business represented by the railways, without destroying the business of your country. There is nothing else that I know of that so permeates the life, the health and the happiness of the nation as its transportation interests. Over a million of men are employed directly by the railways; at least five millions are employed by the railways and the companies which are subsidiary and producers for the railways. Twenty millions of people, or one-fourth of all the inhabitants of this land, are dependent for their daily bread, their health and their happiness upon the prosperity of the railways.

Therefore, he is a very careless man and no lover of his country who turns in and joins the crowd of demagogues who today are howling and abusing the railways. Your congress, your legislatures, your courts, must consider that this is an enormous question and one of those which goes to the very vitals of the life of the country. If the present condition of affairs is prolonged, it means panic; it means suffering; it means dull times, long hours and poor wages for the working people. Never is the country so prosperous as when the railways are prosperous. The talk that their tariffs must be reduced; that the railways are charging too much, is the most foolish of all. Your railway rates are less than those of any country known to civilized man. A trifling reduction which you would be able to get would not secure happiness or comfort to the great mass of people, but might cause great suffering to those very same ones. It might mean a trifling sum of money to some shippers, but it would be productive of loss to the great mass of workingmen.



THE TWO GREAT INTERESTS LINKED IN COMMERCIAL PROGRESS.

What the Country Demands.

If you can get public rates and the same rates to all, that is what you need. What you desire for the good of the country at large is more good tracks, good equipment, and good service; and you can only get them by allowing the railways to charge fair prices for their services.

You have to trust your lives daily to the employes of the railways—from the men who manage down to the lowest employe who flags at the crossing. Are you willing to trust your lives to this large class of men whom you abuse continually? Do you suppose you can abuse the managers and still have the ordinary trainmen or employes loyal? Do you suppose you can have the railways run without accidents if the great mass of employes are to read daily in the newspapers and magazines, and to listen to the speeches of public men saying that the men over them are unworthy of confidence—are wicked and criminals? No, all this must stop.

Neither can you settle the condition of the railways by different people and different managers running to Washington and claiming the protection of the president. In fact, we have got so hysterical and frantic that we seem to appeal to the president for almost everything, like the peasant of Russia. When we find a train late, we say we will write the "Great White Father" in Washington and he will regulate and correct it.

Obedience to Law.

I admire the stand taken by the president of the Pennsylvania Railroad, when he said he had no cause to go to Washington to confer with the president—that his company desired to obey the law.

This is what all the railways must do—submit to the law. This is the first *sine qua non*. You must decide and indicate that your railways shall be managed according to the law. Wall Street must learn from the bitter experience of the last few months that the railways are not playthings—that their securities, as I have said before, are not counters in the game of speculation, and that they are entitled to legitimate dividends.

The burden of the work, however, of educating the people is on the railway officials. You must

"Take up the white man's burden—
No royal rule of kings,
But toil of serf and sweeper—
The tale of common things."

The resentment of the politicians in time will die away; the shipper will soon forget that his right to receive rebates was not inalienable and that the railways at least have not wronged him in stopping them; the members of congress and legislatures who have been so accustomed to the free use of transportation that the purchase of a ticket seems like flying in the face of Providence, will find that it has been decreed by the people, and not by the railways; that they must receive no more free transportation, and they will in time stop abusing the railways for this change.

Placate the Public.

You must manage your railways so as to placate the public. While being conservative and protecting your interests, you must give the public the consideration that is due them. You must reason and explain your situation to congress, to legislatures, to city governments, to commercial bodies.

Above all, you must make your do-

ings public; you must show (what I believe it is perfectly easy to show) that the railways of this country are not over-capitalized; that not for an instant could they be produced for their present bonds and stocks.

Above all things, the Interstate Commerce Commission at Washington must be strengthened; its numbers should be enlarged; the salary of its members should be increased; it should be filled with the ablest men of this country and you must cultivate them and act in harmony with them and show that you want nothing that is wrong, but want and must have your rights.

I desire to say that from years of experience with the members of the Interstate Commerce Commission who have been there so long, I can testify to their worth and ability—to the unselfish manner in which they have tried to serve both the people and the railways, and when I say that the commission should be strengthened I imply no disrespect of them, but they have so many new duties and so much more is expected of them than formerly, that it will require a large additional force to do the work, and that force should be strengthened by good men.

I believe in time your position, instead of being looked upon as one of disgrace, as it has been for the last year, will gradually get back into public esteem until you will be looked upon, as you ought to be, as the best in the land—as the men on whose judgment and exertions the public prosperity of the country depends.

Honesty Demanded.

You have only got to be honest and to your own selves true, bearing for a little while the abuse and contumely of the present, and the future will be yours.

By patience and time the legislation of congress and of the states in reference to the railways must be harmonized. It will not do to have forty-six states passing forty-six different acts. So far as it is possible, all legislation in reference to rates should be left to congress, but the states should exercise their full power as to repairs and the condition of the property, etc.

Above all, you must have legislation giving you authority to contract and make agreements between yourselves which can be enforced. These agreements must be public and in case of complaint, passed upon by the Interstate Commerce Commission; you must have legislation providing that no new railways shall be built or new stock and bonds issued, except with the approval of the Interstate Commerce Commission. I know this will cause a storm among some railway promotors, but, gentlemen, you have got to submit and you might as well make up your minds now that you are no longer a private industry and he who is not prepared to manage his railway as a public institution in accordance with law should resign and seek other business.

A new evangel must be preached in reference to the railways; they must be placed upon a higher plane and instead of being considered by the ordinary people as pariahs, they must be considered by all as benefactors, and you who have struggled along so faithfully during the past years, doing many things that have been criticised, but doing them only for your company, and not for your personal aggrandizement, you are the men to preach this new gospel and produce a higher and better condition of affairs.

You would think today from the interviews emanating from Wall Street that the railways were ruined; you would think from the interviews of the politicians and the demagogues that railway honor had departed from this earth; you would think from the interviews that you read in foreign papers, where probably the wish is the father of the thought, that the day of American expansion and development had gone—that we were unable to manage such large affairs—but if you are faithful to your trust; if you have patience; if you have integrity, as I believe you have, you will outlive all these attacks—all these severe criticisms, and see a better day dawn for the railway interests of this country, and for yourselves as managers of those interests.

To this end every man—whether a shipper or an individual—and every man who loves his country—every man who loves fair play—should join in aiding and abetting.

IRON AND STEEL INSTITUTE.

The annual meeting of the Iron and Steel Institute will be held at the Institution of Civil Engineers, London, May 9 and 10. At the first day's meeting, the retiring president, R. A. Hadfield, will induct to the chair the president-elect, Sir Hugh Bell, who will deliver his inaugural address. The Bessemer gold medal for 1907 will be presented to J. A. Brinell, of Stockholm. Reports will be received and papers will be read and discussed. On the second day, the awards of the Andrew Carnegie gold medal and research scholarships for 1907 will be announced, and papers will be read. In the evening, the annual dinner of the institute will be held in the grand hall of the Hotel Cecil. The following is a list of the subjects of papers which are expected to be submitted: "The Use of Steam in Gas Producer Practice," "Sentinel Pyrometers and their Application to the Heat Treatment of Tool Steel," "Induced Draft with Hot Air Economizers for Steel Works and Blast Furnace Boilers," "The Influence of Process of Manufacture on Some of the Properties of Steel," "The Distribution of Sulphur in Metal Ingot Molds," "Steel Making from High Silicon Phosphoric Pig Iron by the Basic Bessemer Process," "Steel Making from Pig Iron Containing Chromium, Nickel and Cobalt," "Electrically Driven Reversing Rolling Mills," "The Ageing of Mild Steel," "Carbon-Tungsten Steels," "The Nomenclature of Iron and Steel."

The council has accepted a cordial invitation to hold the autumn meeting of the institute in Vienna, Sept. 23, 24 and 25. After the meeting, there will be alternative excursions to Bohemia and Syria, by invitation of the Prague Iron Industry Co. and the Austrian Alpine Mining Co. An invitation has also been received from the Wirkowitz Mining & Iron Works Co. to visit its works. A very successful meeting was held in the Austrian capital 25 years ago.

The council has decided to reprint the first volume of the Institute's Transactions, which will contain the presidential address delivered by the Duke of Devonshire on June 23, 1869, papers by Lowthian Bell and others, making a volume of 240 pages, with 26 plates, which will be sold for 12 shillings.

Book on a Bulk Freight Steamer.—During the past three or four years it has become the practice of the steel-making companies that have iron mines in the Lake Superior country to construct their own bulk freighters. The *Marine Review* has recently published a complete description of one of these freighters, the J. H. Sheadle. The description goes completely into the construction of a boat, from the hull and machinery standpoint, but while technical in its nature, it is not without interest to the layman. The book is copiously illustrated and sells for fifty cents by the Penton Publishing Co. It should be of interest to all steel works.

S. Bayard Dod, president of the board of trustees of Stevens Institute of Technology, Hoboken, N. J., died of heart failure, at his home in South Orange, N. J., at the age of 68 years.

AN OPEN HEARTH STEEL FOUNDRY.

A MODERN PLANT FOR ACID OPEN HEARTH CASTINGS.

New Department of the National Foundry Co., Erie, Pa.

STEEL foundry for the production of acid open-hearth castings has been added to the gray iron plant of the National Foundry Co., Erie, Pa. Notwithstanding the tremendous annual consumption of iron and steel by the manufacturers of the Erie district, and the natural advantages of the city as an ore-receiving port, neither steel works nor blast furnaces have yet been located within its confines, and the pouring of the first heat on March 4 was an event of considerable local interest, as it marked the initial production of steel in this important foundry center. Additional interest is also attached to this venture, as it reflects a growing recognition among gray iron founders of the rapid replacement of iron sections with steel and their inclination to equip to meet the changing requirements of the trade.

In designing the plant, the utilization of existing buildings was not even considered, as it was manifest that structures intended for gray iron work are wholly unsuited for steel practice. A new building was planned with facilities for handling all kinds of jobbing work, from the smallest section to castings weighing 50,000 pounds. Head room, ventilation and lighting were carefully considered in the erection of the buildings, which were designed by F. Felkel, architect, Pittsburg, and ample space provided for the erection of additional furnaces, if required.

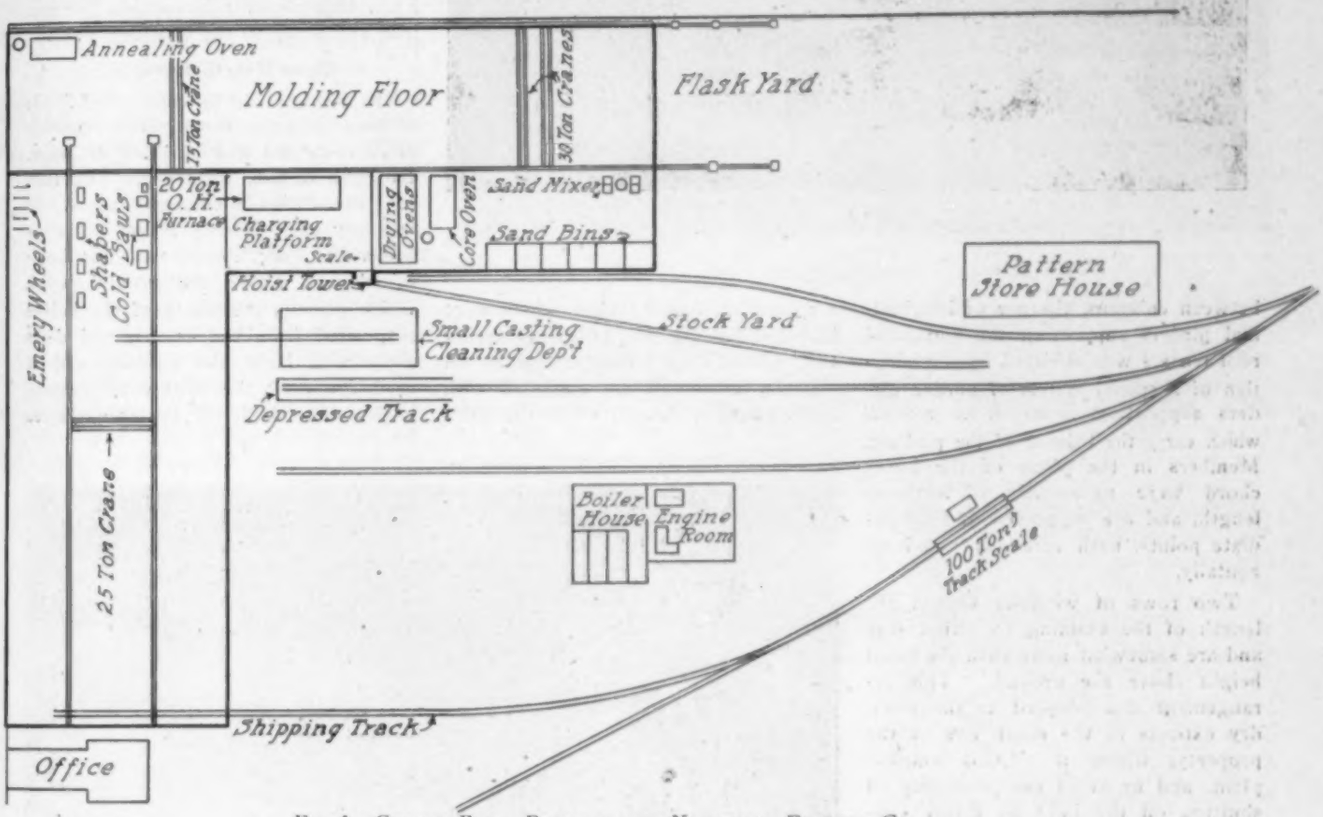


FIG. 1.—GROUND PLAN, PLANT OF THE NATIONAL FOUNDRY CO.

Plant Arrangement.

The steel foundry, a general view of which is shown in Fig. 4, is built at right angles to the gray iron plant with which it connects at one end, as indicated in the ground plan, Fig. 1. The crane runway from the gray iron department extends into the steel foundry a distance of 15 feet under the main runway to facilitate the transfer of castings to the cleaning department and their final disposition through the gray iron plant to the shipping track which enters one end of the old building. The arrangement of the crane runways is clearly shown in Fig. 3.

Construction of the Building.

The building, which is of steel construction sheathed with puddled charcoal iron sheets, is divided into two bays under one roof. This type of construction is somewhat unique but was adopted with a view of eliminating one row of columns and provides an unbroken molding floor. The building is 331 feet long and 122 feet 6 inches wide. The height to the center of the crane rail is 32 feet 6 inches, with a clearance of 8 feet, to the under side of the roof truss, while the extreme height to the peak is 80 feet. The height to the top of the crane rail was decided upon to allow ample clearance for the handling of large castings and for the future installation of an overhead charging machine to serve the open-hearth furnaces.

In designing the building the problem of making the roof trusses over the two bays symmetrical was solved by making the width of the ventilators

27 feet 6 inches, the difference in the width of the two spans, which are 75 feet and 47 feet 6 inches respectively. Owing to the width of the bays between columns, the use of longitudinal girders supporting the additional roof trusses was obviated by the adoption of a special system of purline girders supporting intermediate rafters, which carry the balance of the purlines. Members in the plane of the lower chord were necessarily of extreme length, and are supported at intermediate points, both vertically and horizontally.

FIG. 2—OPEN-HEARTH FURNACE.

Two rows of windows extend the length of the building on either side and are somewhat more than the usual height above the ground. This arrangement was adopted as the foundry extends to the north line of the property, where it adjoins another plant, and to avoid the possibility of shutting off the light by future construction on this side, the windows were placed well above the ground level. The natural illumination, even on the darkest days, is ample, and for night work 14 Cooper Hewitt mercury vapor lights have been provided, which are located at a height of 40 feet above the floor and give a well-diffused light, eliminating all shadows.

The ventilators in the gable extend the length of both sides of the building and are operated from the foundry floor. The building is constructed to withstand the severest shocks, approximately 700 tons of steel having been used in its erection.

Molding Floor.

The main bay is used entirely as the molding floor and is commanded by three electric traveling cranes having a span of 71 feet 8 inches, which were installed by the Morgan Engineering Co., Alliance, O. Two are of 30-ton capacity each and are equipped with 5-ton auxiliary hoists, while the third has a capacity of 15 tons. The latter, which can be operated at a high speed, is used almost entirely for transferring castings to the cleaning floor and also serves the annealing room, while the heavier cranes handle the ladles, flasks, molds, etc. In the smaller bay are located the open-hearth furnace, core and drying ovens, sand bins, mixer and core department.

The stock yard is located between two standard gage tracks paralleling the furnace side of the plant. All of the incoming material in the form of sand, iron and scrap is unloaded from the track adjacent to the building and the other track, which can also serve the yard, is primarily used for the shipment of small castings and is conveniently located for the loading of cars from the small casting cleaning department. A narrow gage track extends through the stock yard on which the charging buggies operate and leads to the hoist tower which contains a 5-ton Otis elevator for raising the pig iron and scrap to the charging floor.

Open-Hearth Furnace.

The open-hearth furnace, Fig. 2, is of the acid type, has a rated capacity of 20 tons, and was installed by Alex. Laughlin & Co., Pittsburg. The furnace foundation is concrete and as the masonry extends only 5 feet 8 inches below the floor, the furnace has been raised well above the ground level, which permits the filling of the ladles suspended from the cranes, and does away with ladle pits entirely. Oil is used for fuel, the Kirkwood system having been installed by Tate, Jones & Co., Pittsburg. Burners are located at either end of the furnace and are operated singly, the valves being reversed every fifteen minutes. The burn-

FIG. 3—ARRANGEMENT OF THE CRANE RUNWAYS

ers when not in use are withdrawn as shown in Fig. 5, the air and oil pipes being hinged to permit the withdrawal of the burners when not in use. The furnace has also been built for the use of producer gas if a change to coal becomes necessary. The charging platform, Fig. 5, is supported on heavy structural steel members and is provided with steel plate flooring. It is 64 x 46 feet in dimensions, and is raised to a height of 12 feet 6 inches above the foundry level.

Melting stock is delivered to the charging floor on flat cars which are loaded in the stock yard, and after being weighed on a scale opposite the elevator opening, are moved in front of the charging door where the material is unloaded by hand. To facilitate the handling of pig metal and large pieces of scrap a long bar resting on rollers is used, which, after being run into the furnace is given a slight twist and the burden is dropped. To secure a uniform distribution of stock three charging doors, each three feet wide, have been provided. The furnace spout extends into the main bay, where the steel is tapped into 20-ton bottom pour ladles, manufactured by the W. B. Pollock Co., Youngstown. By varying the size of the nozzles, either a light or heavy flow of metal can be had, thus adapting a large capacity ladle to the pouring of either small or large molds. Provision has been made for the installation of an overhead charging machine and one will be added when the second furnace is built. The narrow gage track from the stock yard likewise extends into the foundry underneath the charging platform, a turntable being provided on the elevator. This facilitates the movement of material into the plant from the yard.

Drying Ovens.

Two ovens for drying molds are located in the smaller bay near the open-hearth furnace. They are each 45 feet long, 10 feet wide and 12 feet high, built of brick with rails in the roof having brick arches sprung between them. A standard gage track extends into each oven from the main bay, where the molds are placed on flat cars by means of cranes. Each oven has a capacity of five cars, which are operated by a cable haulage system. The ovens are fired from the floor level at two points to secure a well diffused heat and the ashes are removed from a pit underneath. The core oven adjoins the annealing ovens, is built of brick and is 25 feet long, 10 feet wide and 7 feet 6 inches high. It contains one standard gage track on which the core buggies operate and is fired from the rear at only one point. One flue serves the three ovens, as indicated in Fig. 6. The core department is located between the sand bins and the drying ovens.

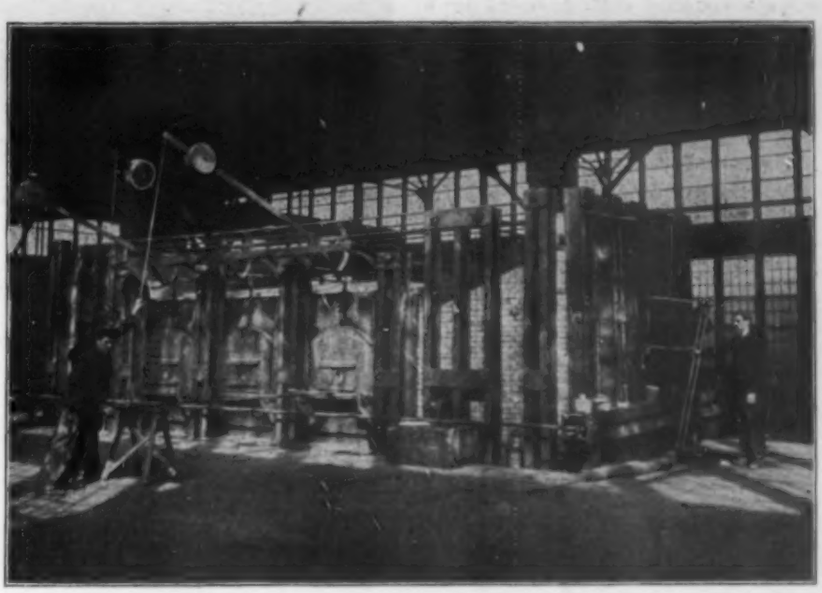


FIG. 5—OPEN-HEARTH FURNACE CHARGING FLOOR

The sand bins, six in number, are divided by wooden partitions and have a capacity of two cars each. The sand is unloaded from cars on the inbound track which parallels this side of the building. The mixer is located in the smaller bay convenient to the sand bins and core department, as shown in the ground plan, Fig. 2.

Sequence of Operations.

The foundry has been planned for a logical sequence of operations. After the molds are made they are taken to the drying ovens, if the sections are not to be cast in green sand, and after being removed are conveniently placed in the foundry for casting. After being shaken out they are conveyed by the cranes to the cleaning department, and if necessary, to the annealing ovens located in this section of the main bay. The shapers, cold saws, etc., which are operated by individual motors, have been placed underneath the 25-ton crane runway from the gray iron foundry, as shown in Fig. 3. This has a span of 40 feet and commands the

FIG. 4—GENERAL VIEW OF THE MOLDING FLOOR

center aisle of this department, which has a width of 110 feet. It provides only limited head room, having a height of only 16 feet to the top of the crane rail and is 15 feet below the main runway in the steel foundry. Swinging grinders are arranged in a row at one end of the plant and are driven by belts from a common shaft operated by a motor. The finishing department for cleaning small castings is located in a separate building, Fig. 2, and is 80 x 30 feet.

Annealing Furnace.

The annealing furnace, shown in Figs. 7 and 8, is 20 feet long, 10 feet wide and 7 feet high and is fired from two points at the side, as shown in the plan view. It contains three ports 6 inches square on the firing side, and the same number, 10 inches square, on the opposite side. By this arrangement the heat is evenly diffused, making one side of the oven as hot as the other. The ovens were designed by W. A. Riddell, superintendent of the plant.

FIG 6—CORE AND DRYING OVENS

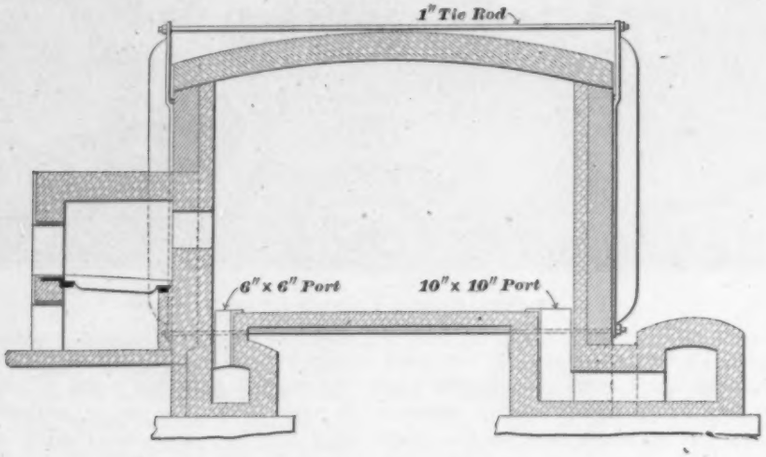


FIG 7—CROSS SECTION ANNEALING FURNACE

Lifting and Sliding Doors.

The main crane runway extends through the large bay into the flask yard, a distance of 64 feet, as shown in Fig. 9. This arrangement permits the handling of heavy flasks by cranes. Lifting and sliding doors have been provided for the passage of the cranes into the yard which are decidedly novel in construction. The large center door shown in Fig. 10, provided for the passage of the crane load is 28 feet 9 inches high and 16 feet wide, and is mounted on roller bearing wheels which operate on a narrow gage track. Its trussed steel frame is covered with sheets to conform with the sheathing of the remainder of the building. The lifting door provided for the passage of the crane bridge is 74 feet long, 9 feet 6 inches high, and when closed rests on the crane runway on either side. The door is elevated by wire cables, attached at two points, which pass over two sets of 20-inch sheaves, and is counter-weighted slightly less than its own weight. To the bottoms of the counterweights is attached an equalizing bar with a cable fastened to its center, which passes down to a winch on the floor. This arrangement permits one man to raise the door. To increase the lighting at this end of the plant the door has been covered with a translucent fabric.

Power House.

The power house is 50 x 76 feet 4 inches, of concrete block construction, and has an iron roof. It is equipped with three 150-horsepower boilers and

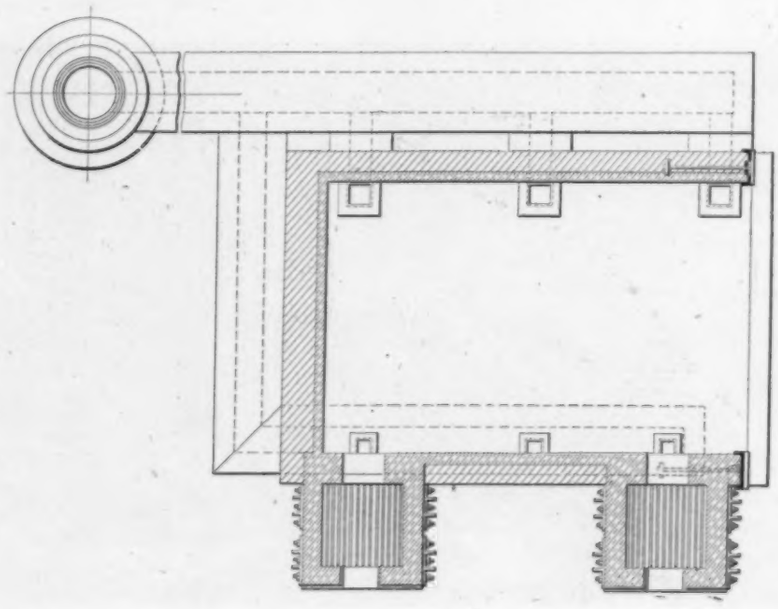


FIG. 8—PLAN OF THE ANNEALING FURNACE

FIG. 9—END VIEW OF STEEL FOUNDRY SHOWING SLIDING AND LIFTING DOORS FOR PASSAGE OF CRANES

a 300-horsepower 4-valve engine furnished by the Erie City Iron Works. The engine is direct connected to a 200-kilowatt generator made by the Burke Electric Co., Erie. A compound air compressor, having a capacity of 830 cubic feet per minute, was furnished by the Bury Compressor Co., Erie. Oil pumps for the Kirkwood system are also located in the engine room and sunken oil tanks with a capacity of 20,000 gallons are conveniently located and are filled from cars by gravity. The pattern shop and pattern storage is 36 x 100 feet, and coke and sand sheds have also recently been added. The company will continue the manufacture of gray iron castings melting about 40 tons per day, and will later use for this purpose the old plant on Cascade street, which it owns, and which is temporarily occupied by the Cascade Foundry Co.

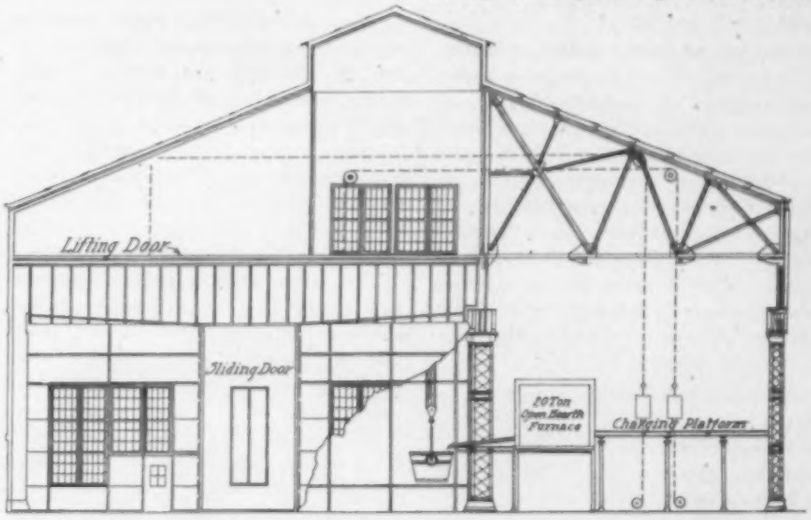


FIG. 10—CROSS SECTION AND END ELEVATION OF STEEL FOUNDRY

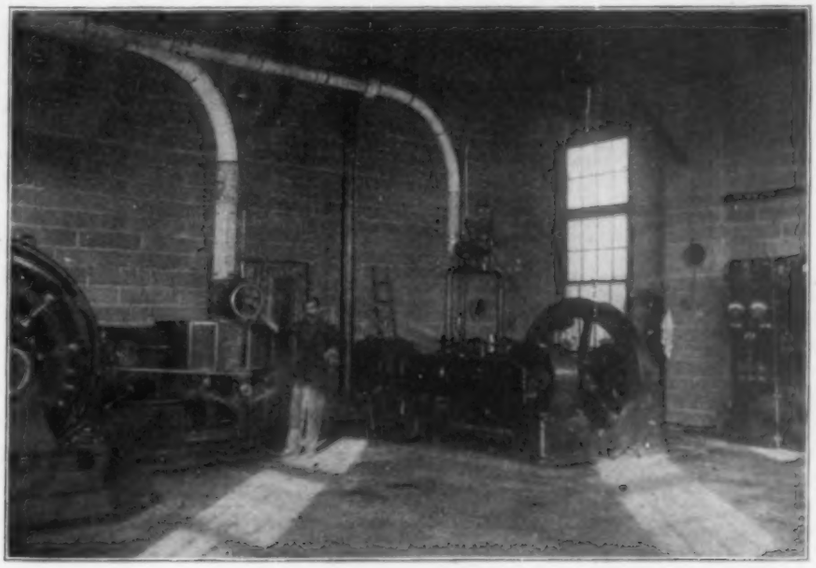


FIG. 11—ENGINE ROOM, POWER PLANT NATIONAL FOUNDRY CO.

BESSEMER MEDAL AWARD.

According to the Engineering Supplement of the *London Times*, the Bessemer Gold Medal for 1907 will be presented to Johan August Brinell, of Stockholm, at the forthcoming annual meeting of the Iron and Steel Institute. Few metallurgists have done so much for the advancement of the metallurgy of steel as Mr. Brinell; his chief researches have dealt with the changes in texture on heating and cooling steel and with his well-known ball test for determining the hardness of metals.

School for Artisans.—Announcement is made that the seventh annual session of the summer school for artisans, held under the direction of the College of Engineering of the University of Wisconsin, Madison, will begin June 24 and continue for a period of six weeks. Courses of study are offered on the following subjects: Engines and boilers, applied electricity, mechanical drawing and machine design, materials of construction, fuels and lubricants, shop work and manual training. The entire laboratory and shop equipment belonging to the college of engineering is used by the students in the summer school. The requirements for admission do not extend beyond a working knowledge of English and arithmetic. The policy is to allow a large amount of individual work so that the student may take advantage of all the preparation he has obtained.

The New York State Assembly has passed the Stern bill which compels factories to keep surgical appliances and supplies ready for instant use in case of accident.

THE UTILIZATION OF LABOR[1].

By Henry L. Gantt.[2]

In considering the subject of labor we must recognize the fact that in this country so long as a man conforms to the laws of the state, he has the right to govern his own conduct and to act in such a manner as his interests seem to indicate.

Granting this, it follows that any scheme of management to be permanently successful must be beneficial alike to employer and employe, and neither the labor unions that regard their interests as essentially antagonistic to that of the employers, nor employers associations whose only effort is to oppose force by force, can ever effect a permanent solution of the problem of the proper relations between employers and employees.

Advantages of Detail Study of Labor.

Those who have given even superficial study to the subject of labor are beginning to realize the enormous gain that can be made in the efficiency of workmen if they are properly directed and provided with proper appliances. Few, however, have realized another fact of equal importance, namely, that to maintain permanently this increase of efficiency the workman must be allowed a portion of the benefit derived from it.

To successfully obtain a high degree of efficiency, however, the same careful scientific analysis and investigation must be applied to every labor detail as the chemist or biologist applies to his work. Wherever this has been done, it has been found possible to reduce expenses and, at the same time, to increase wages, a condition satisfactory to both employer and employe.

The great difficulty in instituting this method of dealing with labor questions is that usually neither employer nor employe has sufficient knowledge of the scientific method to realize either of the benefits to be derived from it. In general, their inclination is to adhere to the methods with which they are familiar, and to distrust all others, even though their methods have failed to bring them appreciably nearer the solution of their problems, and the newer methods have produced results far more satisfactory than they even hoped for.

A scientific investigation into the details of a labor condition that has grown up unassisted by science has never yet failed to show that economies and improvements are feasible that benefit both parties to an extent unsuspected by either.

The scientific laboratory for the study of materials and forces originally considered as belonging only to educational institutions, has recently become a recognized necessity in our large industries, and to it principally the great advance of recent years has been due.

As yet, however, in but few cases has any definite attempt been made to study in a scientific manner the most efficient way of utilizing the human labor. Of how much work of various kinds the ordinary man has done, we have many records, but of how much a man especially suited to any class of work can do, we have almost no knowledge. Enough study has been spent on the subject, however, to determine that men especially suited to any particular kind of labor, if supplied with proper implements and intelligently directed, can do on an average at least three times as much as the average workman does, if the limiting factor is physical exertion and, if assured proper compensation, will do so day after day.

Equitable Compensation of Labor.

The only healthy industrial condition is that in which the employer has the best men obtainable for his work, and the workman feels that his labor is being sold at the highest market price. The employer who insists on more service than he pays for, and the employe who demands excessive wages for his work, both lose in the long run. The former worries continually about how to manage dissatisfied workmen that are often on the verge of a strike, and in dull times the latter lives in constant dread that his employer may no longer be able to continue business and he may be out of work.

Unless sufficient work goes with high wages, the result is apt to be disastrous to both employer and employe. If we would have satisfactory workmen we must learn how to make their labor efficient, for it is to efficient labor only that high wages can be uniformly paid. Again, if a plant is badly laid out, contains inferior or antiquated machinery, or the management is inefficient, it may be impossible for even the best workman to do an amount of work really entitling him to good wages.

Any one of these and other causes may explain why a plant whose name for years has been a synonym for prosperity has gradually become less prosperous, until today it can scarcely hold its own by decreasing the wages of its employes. The next stage of such plants is to close down indefinitely and to remain for years monuments to the shortsighted policy of their owners and the misfortune of their employes.

The time to make provision against such a fate is not when sharp competition begins to show the need of it, but when prosperous times produce a large surplus of earnings. Out of such earnings ample provision should be made to take full advantage of all improvement in apparatus or management that are available. When I speak of improving a plant, I do not necessarily mean enlarging it, but equipping it with the best and most efficient apparatus scientific investigation can suggest and ingenuity can devise.

When I speak of improving the system of management I mean the elimination of all elements of chance or accident and the accomplishment of all the ends desired in accordance with knowledge derived from a scientific investigation of everything down to the smallest detail of labor, for all misdirected effort is simply loss, and must be borne either by the employer or employe.

In a proper system of management practically all loss of this character is eliminated, and the saving effected by this alone will usually pay all the expenses of the system and leave a handsome profit.

Wherever any attempt is made to do work economically the compensation of the workman is based more or less accurately on the efficiency of his labor. Very fair success in doing this has been accomplished in day work by keeping an exact record of the work done each day by every man and by fixing his compensation accordingly. This method, however, falls very far short of the highest efficiency, for very few workmen know the best way of doing a piece of work, and almost none have the ability to investigate different methods and select the best. It often happens then that a man working as hard as he can falls very far short of what can be done on account of employing inferior methods, inferior tools, or both.

Setting a Task.

We can never be certain that we have devised the best and most efficient method of doing a piece of work until we have subjected our methods to the criticism of a complete scientific investigation. Many people who have been accustomed to seeing an operation performed in a certain way, or even to performing it in that way

[1]Abstract of an address to the senior class at Stevens Institute of Technology, Feb. 11, 1907.
[2]Consulting Engineer, Pawtucket, R. I.

for a number of years, imagine they know all about it, and resent the intimation that there may be some better way of doing it. Anybody, however, who carefully analyzes the sources of his methods will find that the mass of them are either inherited, so to speak, from his predecessor, or copied from his contemporaries. He will find that he knows but little of their real origin, and consequently has no ground on which to base an opinion as to their efficiency.

Even such a simple operation as shoveling is done very economically in many places. The writer has seen the same shovel used for coal, ashes and shavings, and this when coke forks were available for the shavings. The foreman had apparently given the subject no study and was content if the men were at work. The idea, of working efficiently had never occurred to him. This is, of course, an extreme case, but it is a real one, and all degrees of efficiency exist between this and the case where each workman is provided with the proper implement and given a specific task for the accomplishment of what he is awarded extra compensation.

Doing the Task.

Having determined the amount of work that a man can do, we can usually get it done if we offer the proper wages for doing it, and furnish an instructor who will teach the workmen how to do it. If the best method is taught to a capable workman to whom good wages are paid for its successful operation it would seem that we had done enough to assure the work's being done that way permanently. Such, however, is not the fact, for while these conditions will usually produce the desired result, they will not always maintain it, but must be supplemented by a fourth conditon, namely; a distinct loss in wages on the part of the workman unless a certain degree of efficiency is maintained.

The importance of maintaining a definite degree of efficiency is readily understood when we consider that a properly equipped plant has only its proper complement of each kind of machine, and if the output of any one falls below a certain amount the output of the whole plant is diminished in proportion and the profits fall off in a much greater ratio. This fact does not appeal to the workman who has made good wages for several days and concludes to take it easy for a while, unless he also feels the loss his going easy causes his employer.

In order to get the best results the following four conditions are necessary:

1. Complete and exact knowledge of the best way of doing the work, proper appliances and materials. 2. An instructor competent and willing to teach the workman how to make use of this information. 3. Wages for efficient work high enough to make a competent man feel that they are worth striving for. 4. A distinct loss in wages in case a certain degree of efficiency is not maintained.

These four conditions for efficient work were first enunciated by Fred W. Taylor, and when they are understood their truth seems almost axiomatic. They are worthy of a very careful consideration.

These conditions are really the steps that must be taken to get any piece of work done efficiently:

1. Learn how to do it right, and how long it should take. 2. Teach a workman to do it in the manner and time set. 3. Award the workman greater compensation for doing it in the manner and time set than he can ordinarily earn in any other manner. 4. Make the conditions of pay such that if he fails to do the work either in the manner or time set he gets only his day's pay.

Let us study these steps one at a time. time.

Scientific Investigation.

The first is a scientific investigation of how to do the work and how long it should take. The fact that any operation, no matter how complicated, can be resolved into a series of simple operations, is the key to the solution of many problems. Study leads to the conclusion that complicated operations are always composed of a number of simple operations, and that the number of elementary operations is often smaller than the number of complicated operations of which they form the parts. The logical method, therefore, of studying a complicated operation is to study the simple operations of which it is composed, a thorough knowledge of which will always throw a great deal of light on the complex operation. Also, the time needed for performing any complex operation depends upon the time of performing the simple operation of which it is composed. The natural method, then, of studying a complex operation is to study its component elementary operations. Such an investigation divides itself into three parts, as follows: An analysis of the operation into its elements; a study of these elements separately; a synthesis, or putting together the results of our study.

This is recognized at once as simply the ordinary scientific method of procedure when it is desired to make any kind of an investigation, and it is well known that until this method was adopted science made practically no progress. If it is desired to obtain the correct solution of any problem we must follow the well beaten paths of scientific investigation, which alone have led to reliable results. It has been conclusively proven that even on ordinary day work a decided advantage can be gained by giving men instructions as to how to perform the work they are set to do. When these instructions are the result of scientific investigation, the gain in efficiency is usually beyond our highest expectations.

It is well known that nearly every operation can be, and in actual work is, performed in a number of different ways; and it is self-evident that all of these ways are not equally efficient. As a rule, some of the methods employed are so obviously inefficient that they may be discarded at once, but it is often a problem of considerable difficulty to find out the best method. It is only by a scientific investigation that we can hope even to approximate the best solution of any problem.

Fred W. Taylor, who was the pioneer in this work of elementary time-study and rate-fixing which involves complete detailed instructions for doing work began on these lines in 1880, and soon became convinced that they were correct. He has fixed a large number of rates, all of which are lower than those usually paid, but as he takes care to furnish the best implements for doing the work, and insists that the work shall be done as he instructs, the good men always make better wages than they can where they are allowed to do the work with the implements and in the manner they see fit. His piece rates, founded on careful investigation, and with an earnest attempt to do justice both to the employer and the employe, have produced not only a much greater output than any other method in the works where they have been introduced, but a much better feeling among the men towards their employers. The fact that during the past twenty-six years a great many such rates have been introduced, always with the same result, is a confirmation of the correctness of the principles on which they are based, and leads to the conclusion that a strict adherence to these principles and a desire on the part of employers to do substantial justice to their employes, would in a

short time materially lessen the antagonism between them and their workmen.

To analyze every job and make out instructions as to how to perform each of the elmentary operations requires a great deal of knowledge, much of which is difficult to acquire; but the results obtained by this method of working are so great that the expenditure to acquire the knowledge is comparatively insignificant.

In the first column in the following table is given the time needed in the machine shop of the Bethlehem Steel Co., to rough turn work before any study had been made; in the second column is the time it took after the proper study had been made and the conditions adjusted to meet the results of the study.

In the third column is given the ratios of work done per hour. The average of these is 3.7.

	Hours.	Hours.	
4-inch U. S. navy gun tubes..	21.56	5.4	4.0
4-inch U. S. navy gun jackets.	35.15	7.1	5.0
6-inch U. S. navy gun tubes..	34.75	8.25	4.0
8-inch U. S. navy gun tubes..	35.00	8.00	4.4
12-inch U. S. navy gun tubes..	54.50	21.50	2.5
12-inch U. S. navy gun jackets.	123.70	43.33	2.6

All the labor of handling pig iron, coal, coke, ore and open hearth melting stock in the yard of the Bethlehem Steel Co., was studied in the same manner and the amount done per man on piece work after the study averaged 3.2 times as much as was done before.

In the Sayles' Bleacheries where I am now at work, I find similar ratios.

This means that whether the labor is that of a Pennsylvania Dutch workman in a machihe shop, a Hungarian laborer handling stock in the yard of a steel works, or a skilled cloth handler in a bleachery, the amount of work the average workman does under the ordinary conditions is only about one-third of what can be done by a proper workman under the best conditions. I could give other illustrations of this ratio, which seems to be fairly uniform. When a man sets his own task, as he virtually does in ordinary day work, he usually does about one-third of what a good man fitted for the work can do under the best conditions.

Instructions.

As a result of our first step or our scientific investigation, in general, we find that it is possible to do about three times as much as is being done; the next problem is how to get it done. No matter how thoroughly convinced we may be of the proper method of doing a piece of work and of the time it should take, we cannot compel a man to do it unless he is convinced that in the long run it will be to his advantage. We must go about the work in such a manner that the workman will have confidence in us and feel that the compensation offered will be permanent.

When this condition of affairs is established we are ready to start a workman on the task, which, when properly set after an investigation, is such as can be done only by a skilled workman working at his best normal speed.

The average workman will seldom be able at first to do more than two-thirds of the task, and as a rule not more than one out of five will be able to perform the task at first. By constant effort, however, the best workman soon becomes efficient, and even the slower ones often learn to perform tasks which for months seemed entirely beyond them. I dwell upon this subject for the task must be such as can only be performed by industrious, skilled workers.

If we have at hand such people that already have confidence in us and are willing to do as we ask, the problem of getting our task work started is easy. This, however, is frequently not the case, and a long course of training is necessary before we can teach even one workman to perform his task regularly, for workmen are very reluctant to go through a course of training to get a reward, especially when they are being told on all sides, as is usually the case, that the high price offered will be cut as soon as they can earn it easily.

Compensation of Labor.

Buying labor is one of the most important operations in modern manufacturing, yet it is one that is given the least amount of study. Most shops have expert financiers, expert designers, expert salesmen and expert purchasing agents—for everything except labor. The buying of labor is usually left to people whose special work is something else, with the result that it is usually done in a manner that is very unsatisfactory to buyer and seller. It is admitted to be the hardest problem we have to face in manufacturing today, and yet it is only considered when the manager "has time" or has "to take time," or on account of "labor trouble." The time to study this subject is not when labor trouble is brewing, but when things are running smoothly and employer and employe have confidence in each other.

Men as a whole (not mechanics only) prefer to sell their time rather than their labor, and to perform in that time the amount of labor they consider proper for the pay received. In other words, they prefer to work by the day and be themselves the judges of the amount of work they shall do in that day, thus fixing absolutely the price of labor without regard to the wishes of the employer who pays the bill.

While men prefer as a rule to sell their time and themselves determine the amount of work they will do in that time, a very large number of them are willing to do any reasonable amount of work the employer may specify in that time, provided only they are shown how it can be done and paid substantial amounts of money for doing it. The additional amount needed to make men do as much work as they can depends upon how hard or disagreeable the work is and varies from 20 to 100 per cent of their day rate.

If the work is light and the workman is not physically tired at the end of the day he will follow instructions and do all the work called for if he can earn from 20 to 30 per cent in addition to his usual day's wages. If the work is severe and he is physically tired at the end of the day he requires from 40 to 60 per cent additional to make him do his work. If in addition to being physically tired he has been obliged to work under disagreeable conditions or in intense heat, he may require 70 per cent or even 100 per cent additional.

These facts are derived from experience and give us a key to the intelligent purchase of labor. For instance, if we wish to buy the amount of labor needed to accomplish a certain task, we must find out exactly and in detail the best method of doing the work, and then how many hours' labor of a man suited to the task working at his best normal rate and by the methods prescribed are needed to perform it.

This is simply getting up a set of specifications for the labor we wish to buy, and is directly comparable to a set of specifications for a machine or a machine tool. The man who buys the latter without specifications is often disappointed even though the manufacturer may have tried earnestly to anticipate his wishes; and the man who buys the former under the same conditions has in the past almost universally found that a revision of his contract price was necessary in a short time. The relative importance of buying labor and machinery according to best knowledge we can get, and the best specifications we can

devise, is best illustrated by the fact that while the purchase price of a machine may be changed whenever a new one is bought, that of the labor needed to do a piece of work should be practically permanent when it is once fixed.

As I have said before few men can work up to these specifications, at first, if they are properly drawn, but many men will try if they are properly instructed and assured of the ultimate permanent reward.

Most men will not sacrifice their present wages to earn a higher reward in the future, and even if they were willing few men could afford to. Therefore, while they are learning to perform the task, they must then be able to earn their usual daily wages, and the reward for the accomplishment of the task must come in the form of a bonus over and above their daily wage.

For instance, if from our time study we find that three hours is a reasonable time for a job that has usually taken from five to ten hours, we set three hours as the time limit and pay the workman 1-3 more, or for four hours, if he does the work in three hours or less.

If he does it in exactly three hours he gets pay for four hours or an increase of 33 1-3 per cent.

As before noted a proper task is always greater than the ordinary workman can perform at first, and must be such as only the most skilled can perform. On the other hand, when the more skilled have been earning their bonus for some time, and the less skilled begin to realize that the prize is real and worth striving for, they make every effort to attain it and rapidly improve in skill.

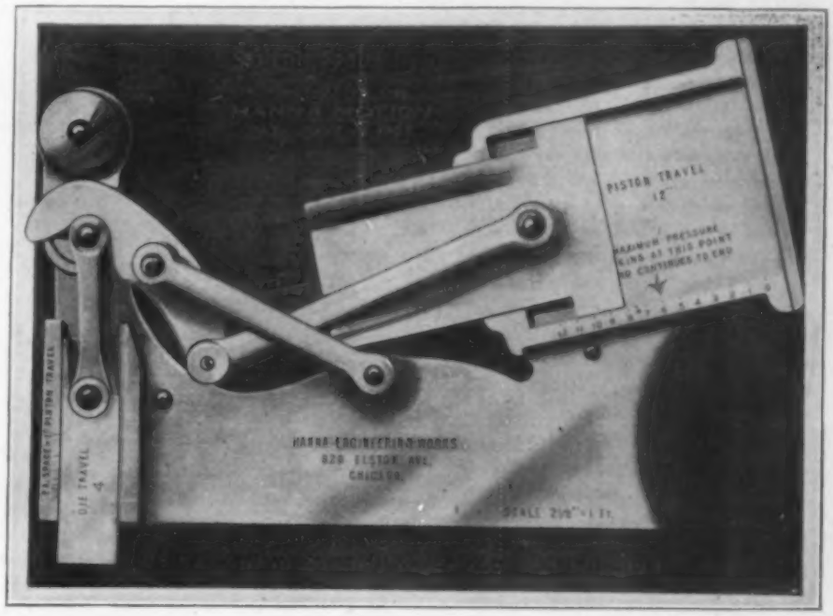
This increase in efficiency makes the payment of high wages possible, and it may be added that without efficient labor, permanent high wages cannot be paid indefinitely, for every wasteful operation, every mistake, every useless move has to be paid for by somebody and in the long run the workman has to bear his share.

Good management, in which the number of mistakes is reduced to a minimum, and useless, or wasteful operations eliminated, is so different from poor management, in which no systematic attempt is made to do away with these troubles, that a man who has always worked under the latter finds it extremely difficult to form a conception of the former. The best type of management is that in which all the available knowledge is utilized to plan all work, and when the work is done strictly in accordance with the plans made. In other words, that management is best which utilizes labor in the most efficient manner.

The best mechanical equipment of a plant that money can buy avails but little if labor is not properly utilized. On the other hand, the efficient utilization of labor will often overcome the handicap of a very poor mechanical equipment, and an engineer can have no greater asset than the ability to handle labor efficiently.

A NOVEL ADVERTISING DEVICE.

The accompanying illustration shows a novel advertising and selling device used by the Hanna Engineering Works, 820 Ellston Ave., Chicago, to call attention to the well-known Hanna riveter. The device is known as the "Silent Salesman" and consists of an aluminum working model illustrating the link motion which transmits the power from the air cylinder to the die of the riveting machine. The model is mounted upon a board, and is mailed, free of expense, to a prospective customer accompanied by a letter which purports to be the story of the model as told by itself. This letter sets forth the advantages and commendable features of the Hanna riveter, and in connection with the working model illustrates very clearly the operations of the full-sized machine. The model is built on a scale of 2½ inches to the foot and the sliding parts are graduated so as to show the relative motion of both the riveting die and the piston furnishing power. The Hanna riveter, too well known to require any extended description. It may be well, however, to call attention to the peculiar feature of the machine which is illustrated by the "Silent Salesman." This is that of a total die travel of four inches, 3½ inches is covered in the first six inches of the piston travel. The remaining six inches of travel of the piston causes the die to move forward the remaining half inch. This brings a heavy, uniform, constant pressure upon the die, thus accomplishing with a pneumatic riveter the same results attained with an hydraulic machine. This feature is clearly demonstrated by means of the model, the operation being clearly traced out by aid of the graduated scales upon the moving parts. An examination of the model makes clear the action of the model much better than any study of drawings and printed matter.



THE SILENT SALESMAN.

Steel Company Wins.—The United States Circuit Court of Appeals at New York has affirmed without opinion the judgment of the lower court in the case of the government against the Crucible Steel Co., a litigation that had been pending for almost a year. The decision is a victory for the steel company, as it upholds its protest against the assessment of an extra duty of one cent per pound on cold rolled steel strips, levied because the surface of the steel had a polish which was incidentally acquired in the process of cold rolling. It was contended by the government that the strips were polished so as to make them better than the grade of cold rolled steel, which is smoothed only, and that, therefore, the extra duty was assessable.

THE UTILIZATION OF LOW GRADE FUEL IN GAS PRODUCERS--II.

By F. E. Junge.

The generation of gas in blast furnaces and coke ovens, which represent the first stage of producer development, is a secondary or by-process accompanying the respective main operations of smelting the iron and of making coke by the destructive distillation of coal in retorts. It is interesting to observe how in the course of time the valuation of these by-product gases has gradually increased. In the iron industry blast furnace gases have become the potential source of energy for driving all machinery required within the works to carry out the entire series of converting and finishing processes which transform the original ore into marketable steel products. When rightly used and husbanded they may even serve, in large scale operations, for delivering power to outside consumers, provided that the latter are located within the commercial distribution radius of the central works. In the coke making industries where the power factor within the plant is an insigficant amount, coke oven gases, generated in modern by-product ovens, are now distributed to neighboring districts either for heating, lighting or power purposes, and have thus become formidable competitors to the ordinary illuminating gas supply undertakings, which they will eventually wipe out. Together with the revenues obtained from other by-products which are gained through the process of purification, the sale of coke oven gases has become a principal source of income to the management of modern European and American works.

Advantages of Gas Producers.

With the growing appreciation of the value and importance of gaseous by-products in the iron and coal industries the idea has gradually forced itself upon the engineer and economist that the gasification of raw coal in producers and the utilization of the gases subsequent to their liberation for industrial purposes is a more all-around efficient mode of operation than is the direct burning of coal in furnaces or under steam boilers. Gas producers have found almost universal adoption in metallurgical, ceramic, cement and other pursuits, and wherever a clean, regulable gas fire is preferred for heating and smelting. The possibility of smoke prevention, of long distance transportation of the gas, and last, but not least, the possibility of employing inferior grades of coal in the combustion process have largely aided to their rapid and general introduction. Even steam power is taking recourse to the gas producer furnace as the last remedy to keep pace with the ever-growing mode of generating power in gas engines directly, and without the intervention of inefficient and passive machine parts, such as constitute the boiler equipment.

It is a well demonstrated fact that gas firing, generally speaking, is more advantageous than grate firing. Yet

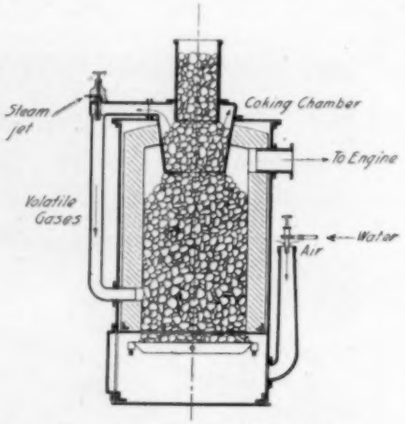


Fig. 1.—Fielding Producer.

the gas generated in modern producers contains only from 70 to 75 per cent of the heat which is liberated through the direct combustion of coal, the rest being lost through radiation in the producer and through cooling in the overflow ducts and transmission pipes. The superiority of gas firing is founded among other things, on the circumstances that, with a surplus of air of only 20 or 30 per cent over what is theoretically needed, it is possible to attain complete and smokeless combustion, while with direct grate firing the surplus of air must amount to from 100 to 250 per cent, in order to obtain the same good results. By far the greatest part of the heat which is liberated through the combustion process is lost on account of the high temperatures at which the burned products are permitted to leave the flues. Therefore, the larger the quantity of products of combustion per unit fuel the less efficient will be the utilization of the fuel. Another advantage of gas firing is that the waste heat can be used in a most simple and efficient manner for preheating gas, as well as air, before combustion; moreover, the capability of regulation is greater and the temperatures obtained can be kept more nearly even than is possible with grate firing, thereby securing greater regularity of product.

Gas producers, whether used for heating or for power purposes, have therefore effected several tangible advantages over the traditional methods of power generation. It should be remembered, however, that by far the most far-reaching of all is the possibility presented to employ, for gasification in producers, low grade fuels such as hitherto escaped utilization entirely. The promoting effect which this remarkable achievement will ultimately have on the development and distribution of iron production, and on the development of all industries which were formerly restricted through the necessity of employing high grade coals and through the unreliability of transportation conditions to certain narrow localities, can be imagined, though it is impossible to realize the ensuing results to their fullest measure.

What the writer submits in the following is a critical discussion of those types of gas producers which have given satisfactory results in several years of continuous service, in Germany, operating on lignitic and peat fuels, mine culm, etc. To avoid misapprehensions, it should be said that while lignite, peat and culm are materials whose characteristics, though widely varying, with geographical location, are similar as concerns gasification in producers almost all over the world, this is not the case with the great mass of ordinary bituminous coals. Thus there are not in Europe bituminous coals which resemble closely the bad caking variety which abounds in this country. So it must not be imagined that bituminous coal producers which give satisfactory service with English or German coal will behave likewise with American. Many a firm laboring under that impression has had to pay for it very heavily. As was said, conditions are different with lignite and peat fuels, especially when they can be brought to a similar degree of moisture contents, or still better, when they are briquetted. As a matter of fact no more universally suitable fuel than brown coal briquettes is available for producer work, provided that they can be obtained in the smaller sizes.

In order to understand the course of producer development, it must be re-

membered that tar, which is a by-product of the destructive distillation of coal in retorts, is a very undesirable element—for reasons that may be easily defined—if the gas is to be used for driving internal combustion engines. When the tarry vapors that are suspended in the gas are extracted by special separators outside the producer, then this separation represents a loss of from 4 to 10 per cent, depending, of course, on the grade of coal used. If the tar is destroyed by superheating within the producer, then the water vapor is decomposed together with the tar-forming hydrocarbons, so that the gain is a double one.

Construction of Lignite-Peat Producers.

Turning now to the constructive principles of lignite-peat producers, it may be said that both fuels can be used in the same type of producer, but that the depth of the combustion zones must be properly adjusted to suit conditions. I shall omit discussing in detail the various earlier systems existing on the continent, and which all have the common principle of generating the gas in one producer and passing it through a second column of incandescent fuel, thereby burning up the tarry vapors or transforming them into stable gases. They all have this disadvantage, that two producers are necessary to do the work of one, and that manual or automatic labor is required to perform the work of switching the valves.

The next step in producer evolution reveals a general tendency to first transform the coal into coke and to gasify it afterwards. The gases distilling from such process tend to form tarry products; therefore, the natural solution presents itself to guide these vapors through another incandescent zone, which is located not outside, but in the producer proper. Among the construction of this class may be mentioned those of Boutillier and of Crossley Bros., the details of which are generally known. Quite a number of makes show a very high column or zone of combustion the gas being drawn off in the middle of the height. The coal which lies above the discharge duct is coked and the distilling gases forced either by steam jet or blower through a special pipe, either below or above the grate, so that in order to get to the main outlet, they must first pass through the incandescent zone resting on the grate. If the distilling vapors containing the greater part of the tarry products are discharged below the grate, they will mostly be burned up, though there is no appreciable loss of heat involved in the process. The carbon dioxide produced is reduced to CO when passing through the incandescent zone, while the steam developed is spilt again into its components. When the distilling gases are made to enter above the grate, they cannot find the oxygen necessary for combustion and are therefore split up or transformed into permanent gases.

Among the more remarkable producers of this class may be mentioned the Daniels bituminous coal producer, built by the Light Pill Iron Works, Stroud, Gloucestershire the producer of the Societe Francaise de Construction Mecanique in Paris, the Porter producer, the Fielding producer, and the Pintsch producer. The Fielding producer is shown in Fig. 1.

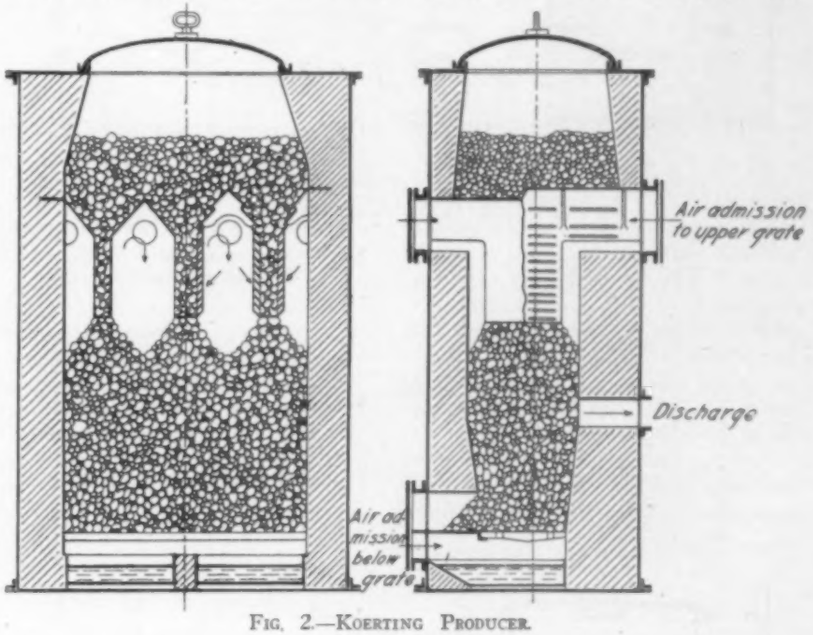


FIG. 2.—KOERTING PRODUCER.

All these constructions have the disadvantage that they require means separate from the producer for generating steam or artificial draught to convey the volatile gases under or above the grate; it is also difficult to so adjust the respective action of the engine, sucking gas from the one side, and of the fan or jet aspirating or pressing from the other, that the antagonistic flows proceed without mutual interference.

The Double Zone Producer.

The latest and most successful step in producer development, and the one deserving our exclusive consideration, is that presented in the double combustion producer, having two zones of combustion, of which one is located at or near the top of the fuel charge, and the other above the grate as usual. This construction has evolved from a natural combination of two well-known types, the ordinary and the inverted producer, the latter drawing in the air at the top and discharging at the bottom, while in the double zone producer, air is drawn in both ways, from top and bottom, the gas being taken off midway between the two spheres of combustion. This combination has been adopted by several concerns both in Germany and France, where the greatest headway has been made in this field of gas power application. Of the more remarkable constructions may be mentioned the Lecauschez producer, consisting of three conical chambers, arranged one above the other. The top space serves for storage; the middle one contains the fuel, which is burning in the upper or outer layers that are exposed to the influx of the air. The lower chamber contains the fuel, which has gradually descended after being coked in the upper part of the producer and is thoroughly burned by the air entering through the grate just as in the ordinary suction coke producer. The distilling vapors produced by the coke and coal at the top are drawn through the upper and incandescent zone, whereby the greater part of the tarry constituents and heavy hydrocarbons are burned. After passing this zone, the upper (Siemens gases) are mixed with the Dowson gases ascending from below, and which are produced in the usual way with a mixture of steam taking part in the process. By mixing the gas from above with the hot gases from below, the tarry particles, which may have passed through the incandescent zone, without being consumed, are now superheated and transformed into sta-

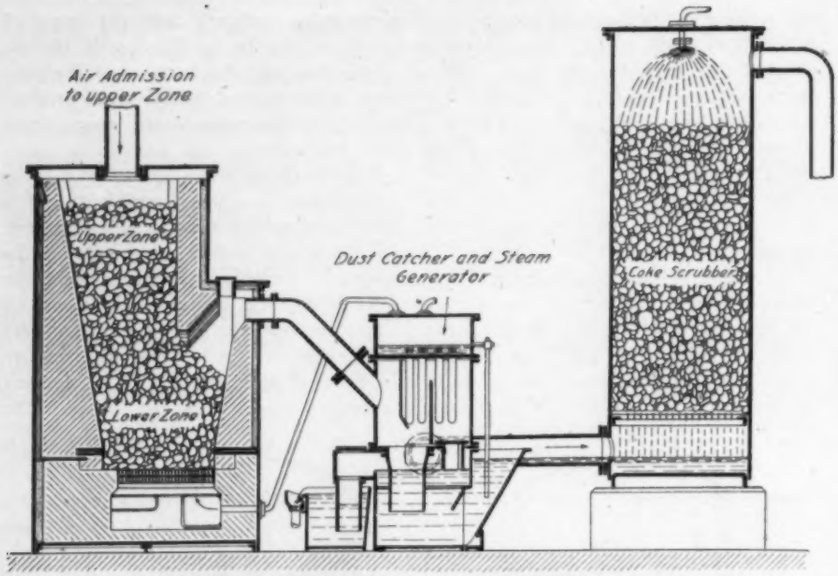


FIG. 3.—DEUTZ DOUBLE ZONE PRODUCER.

ble or permanent gases which will not condense after leaving the producer proper. This producer has been successfully tried with Catalonic lignite, a fuel of which one ton will give out 130 pounds of tar; it has only from 7 to 10 per cent of ashes, and about 40 per cent of volatile matter, of which 10 per cent is water.

Another producer of this class is the one built by Fichet & Heurty in Paris, and which shows the same general characteristics, but is more complicated and expensive to build.

The Koerting Producer.

The firm of Koerting Bros., Koertingsdorf near Hanover, has recently perfected a producer having two zones of combustion and two grates, one at the bottom, horizontal, as in all other cases; the one above is intended to prevent the upper zone from sinking down—which a fuel with high moisture contents is apt to do—and consists of several vertical grates, which form thin pockets, serving to coke the fuel fed from above and to guide the distilling gases through the column of gasified fuel to the discharge duct. The Koerting producer is shown in Fig. 2 One advantage common to all double zone producers is that on account of the double combustion, no fuel or carbon is discharged through the grate unburned, together with the ashes; while this is often the case with the ordinary, and especially with the inverted producer. To avoid such leakage, a very deep bed of ashes must be carried, which offers in the common type of producer great resistance to the air passing through it. The combustion in the new system is so perfect and the ashes so well burned that no revolving grates or other means for discharging them are required.

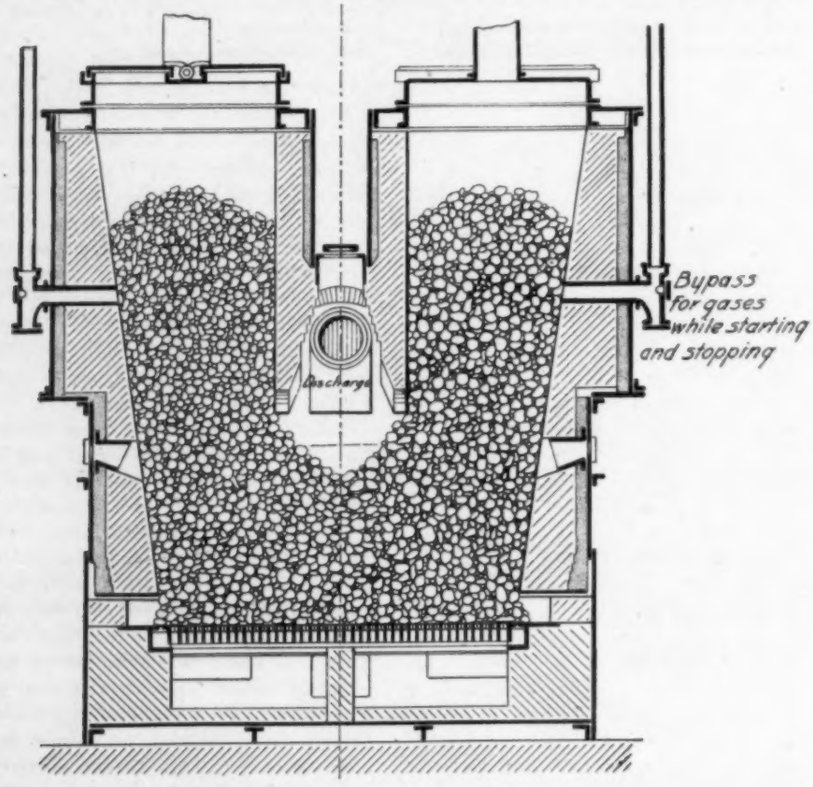


FIG. 4.—DEUTZ DOUBLE ZONE PRODUCER.

The Deutz Double Combustion Producer.

By far the simplest of all these constructions is the Deutz double combustion producer, which is equally applicable for lignite and peat, preferably in the form of briquettes.

The first attempt to gasify raw lignite and peat in producers was made as early as 1902 in Deutz and the system used was the ordinary pressure type. The results attained were exceedingly gratifying and several of the early plants are still in active service, operating on raw peat with 50 per cent water contents. However, pressure plants have now been universally abandoned in Germany, and they should not be adopted in this country. They are less safe, occupy greater floor space and are more expensive in first and operating cost. The separate steam boiler and the gas holder are both apparatus which can be dispensed with by superior measures. The advantages realized by inserting between the producer and engine a fan whose output is automatically varied according to the plant load, thereby making the system more flexible and effective and the producer independent of the pulsations of the engine piston are known. Even for heating purposes this arrangement is preferably used.

Therefore, all of the latest and largest installations are suction plants, running up to 1,000 horsepower per unit. Another reason why the successful pressure plants were abandoned is that the water emerging from scrubbers, washers, and tar separators is very dirty, difficult to dispose of, and contains poisonous substances, which are apt to destroy animal life in the

rivers or lakes wherein they are discharged.

The latest type of Deutz double zone suction producer, which is shown in Figs. 3 and 4, has been running successfully for some time, and has already reached the imposing figure of 40 installations, aggregating a total capacity of 7,000 horsepower.

The producer consists of a vertical shaft of rectangular section with rounded corners, which is closed at the bottom by a fixed grate. The top of the furnace is covered by a sliding hood running on rollers and having an opening for the admission of air. When feeding coal, this cover has to be pushed aside, but there is no danger of any gas escaping, as the air is continuously drawn through the grate below and through the admission pipe above. The operation of feeding has to be performed once or twice in an hour, unless it is automatic. The gas escapes through an opening in the generator wall, which is located slightly below the middle of the producer shaft. There are several poke-holes provided at the sides and at the bottom end, while the interior of the producer can be thoroughly inspected and poked from the top without appreciable interfering with the working process proper. Similarly the grate may be cleaned or inspected through doors provided above and below it.

The working process is the same as described before, and extremely simple. The coal is coked in the upper layers, and partly burned, so that a zone of incandescent fuel is formed. The distilling gases are drawn through this zone, whereby the tarry vapors are either burned or transformed into stable gases. This process of permeation is continued when the gas passes through the lower layers, consisting of coke or rather of coal which has been distilled, until they meet and mix with the gases ascending from below which have been generated by the air passing through the incandescent layers of coke resting on the grate. By the mixing of the gases the rest of the unstable compounds are superheated and made permanent. The process is so effective that the means of cleaning consists only of one coke scrubber provided with a water spray. Between producer and scrubber, the water seal is inserted, having a splash overflow, which serves to absorb the dust that is drawn off with the gases. A fan is arranged behind the scrubber which serves for starting purposes, or it is run continuously if higher engine output is desired. A three-way valve is inserted at the branch between scrubber and engine, in order to be able to blow off the gases into the chimney when stopping and starting.

Ordinary raw lignite contains so much water that no steam need be added. It is sufficient to have some water in the ash pit under the grate, in order to prevent the fine ash dust mixing with the gases.

Tests of the Deutz Producer.

An endurance test made with this producer and lasting 321 hours gave the following results: The fuel used was lignite briquettes, having a calorific value of 8,490 B. T. U. per pound, and containing 35 per cent fixed carbon, 45.3 per cent volatile matter, 4.8 per cent ash, and 14.9 per cent water. The consumption per brake horsepower-hour including all losses was found to be 1.46 pounds. The vacuum averaged 3.5 inches; the gas was examined several times and showed some dust, but almost no tar. Clinkers were removed every six hours. This operation had no influence on the quiet running of the engines. The water was easily cleaned of the dust which is carried off by the gases. The resistance of the washer remained below two inches of water, and showed no appreciable influence on the output of the engine. The load was kept constantly at 81.3 horsepower, while the revolutions averaged 180.5 per minute. When inspecting the engine, it was found that the plant could have been run much longer without requiring any cleaning. In continuous operation it is possible to get even better results than here recorded, as the producer remains in the condition of stability, and gives a purer gas than when disturbed by shutting down.

Another test was made with raw lignite from Brux, having a calorific value of 9,190 B. T. U. per pound, and containing 22.45 per cent of water, and 4.38 per cent of ash, and costing $2.25 per ton delivered. The engine was run at an average load of 66 horsepower and at 144 revolutions per minute. The consumption was found to be 1.19 pound per brake horsepower-hour. At a load of 100 horsepower and 180 revolutions per minute, the consumption was 1.10 pounds per brake horsepower-hour. The fuel cost per brake horsepower-hour is, therefore, 0.12 and 0.11 cents, respectively.

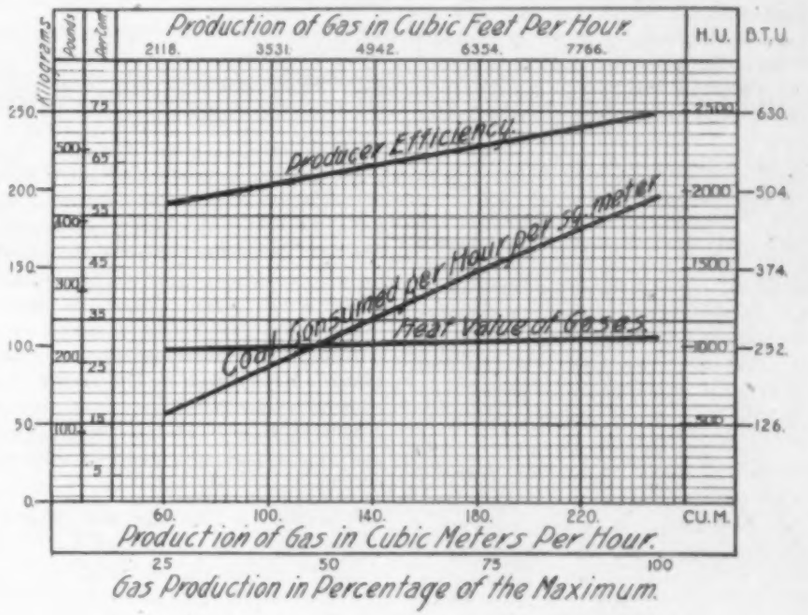


FIG. 5.—GRAPHIC PERFORMANCE OF DEUTZ PRODUCER.

A third test made on a plant of 300 horsepower, with lignite briquettes, having a heat value of 9,170 B. T. U. per pound, and containing 13 per cent of ash, gave the consumption per brake horsepower-hour of 1.15 pounds. Fig. 5 gives the graphic representation of the performance of the Deutz producer.

The best result known to the author that has been so far obtained on the continent with a modern steam plant (compound locomobile with superheat) and working with the same fuel and under the same capacity and load conditions, is 2.46 pounds per brake horsepower-hour, which is more than double the amount consumed in the gas plant.

That much to the efficiencies that have been realized. Now to the oper-

ative conditions and difficulties which exist with gas producer plants.

Operating Conditions and Difficulties.

The temperature of the incandescent reducing zone, the closeness of contact between the tarry vapors and the incandescent material, and the duration of contact exercise an appreciable influence on the effectiveness of tar destruction. These three factors are in turn dependent on the special characteristics of the fuel used, further, on the conditions of operation, and before all on the rate of gasification or speed of driving. If the fuel is of the kind that is apt to stick to the walls, or if it forms arches of big lumps, or if it cracks leaving open wide fissures or gaps through which the gas can escape unobstructedly, then an intimate contact between the volatile gas and the reducing fuel is not possible. If the engine runs for a considerable time at a light load, the temperature of the reducing zone will go down. If on the other hand, the load is a heavy one, then the rate of gasification is very rapid and the speed of gas flow is very high. Consequently, the time available for the incandescent zone to act on the tarry vapors is insufficient. To secure good results the rate of gasification should be kept as nearly constant as possible. This can be done, besides by other means, through by-passing at the lower loads the gas drawn off by the fan back into the producer where it is consumed again.

A fluctuating moisture content of the fuel influences the temperature of the decomposition zone. Load variations are apt to shift that zone either higher up in the fuel column when the suction effect is weak, or lower down when the engine or fan is drawing hard. The chances of decomposition are changed accordingly. A similar effect is traceable to sudden drops or changes of location of the fuel material, such as are produced either by poking from above, or by drawing ashes irregularly below, or by other manipulations.

The decomposition of the tar is, therefore, dependent on many variable factors which must be considered and met in order to secure good results. Of course, the proper design of the producer has a great deal to do with this question, but it cannot be denied that at low loads the tar destruction is less effective than it is at the higher ranges, even if the same kind of fuel is used throughout the run.

Lignite and peat briquettes are the most desirable fuels to use in the double zone process, on account of the regularity of form and composition. The employment, in this type of producer, of raw fuels containing a great deal of water requires skilled attendance, which is more difficult and costly to procure in this country than it is abroad. When using raw fuels of the lignite and peat class it is advisable to insert in the shaft a second grate for resting the upper layers of the charge and enabling the formation of an incandescent zone, since otherwise the charge will sink down too suddenly.

One plant in Meuselwitz, Germany, is working successfully with raw lignite containing 40 per cent of water. Peat is equally applicable and has been burned successfully even with as high water contents as 50 per cent. Ordinary bituminous coal, which does not cake excessively may also be used, though, of course, the usual means for generating steam have to be added. As was said, low grade bituminous coal has not given complete satisfaction. The trouble is that in the upper zone of gasification such fuel is apt to cake and form big solid lumps which have to be destroyed by poking. But the difficulties to gasify fuels of powderous and granular composition have been successfully overcome in producers of similar type. There are plants of 100 horsepower units working satisfactorily in Insterburg, where the fuel which settles down in the smoke box of locomotives is utilized, consisting of grains of from 0 to 7 millimeter size and containing from 15 to 20 per cent of ash.

Utilization of Garbage and Waste.

Similarly, the gasification of city garbage and sewage has been successfully carried out, and plants of this kind are working in Koepenik near Berlin and in Dresden. The method consists in admixing to the garbage and sewage in the city pipes a small percentage of powdered lignite, which absorbs the humus particles of the waste and certain ferro-aluminum and magnesia salts to destroy such molecules as resist absorption. The solid part of the mixture is then allowed to settle down in ponds, is dried afterwards and burned in the producer. With this method, we can generate one brake horsepower-hour from 4.4 pounds of garbage and sewage. A city of 50,000 inhabitants produces daily about 25,000 pounds of waste products, from which can be generated 6,000 horsepower-hours or 1,460,000 kilowatt hours a year.

For inferior grades of bituminous coal, as well as for slack fuel, residues and refuse, such as is found in coal mines and iron smelting plants, the above system is not recommended.

A HINT FOR WRITERS AND PROOF READERS.

Editor of THE IRON TRADE REVIEW:

For several years during which the writer held a position on the editorial staff of an engineering periodical and it was part of his duty to revise the manuscripts offered by engineers for publication, he was impressed with the fact that the grammatical error most commonly made by engineering writers was the use of a singular verb with the plural noun "data." Such expressions as "this data," "much data," "little data," instead of "these data," "many data," "few data," were also quite common.

The use of "data is" has become so common lately in technical papers, and even in books written by engineers, that it is apparent that proof readers as well as engineers need some elementary instruction in the proper use of the language and especially in regard to the plural form of nouns taken directly from Latin and Greek, such as datum and phenomenon. The expression "memoranda is," "phenomena is," "strata is," are sometimes seen in print in journals which otherwise generally use good English.

All the dictionaries give the word as the plural of datum. No good writer ever uses the expression "data is," and no good proof reader ever passes it. I enclose a list of some words taken into our language directly from the Latin or Greek with their singular and plural forms.

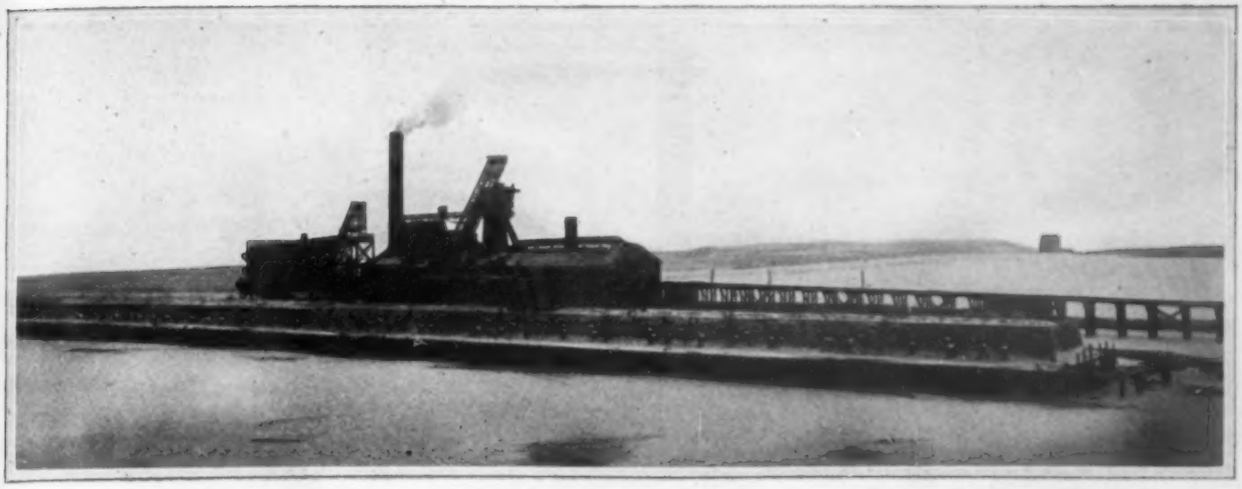
WILLIAM KENT.

Syracuse, April 12.

List of Words Taken Directly Into the English Language From the Latin or Greek.

Singular.	*Plural.*
datum	data
focus	foci
genus	genera
nebula	nebulae
phenomenon	phenomena
alumnus	alumni
alumna	alumnae
larva	larvae
stratum	strata
terminus	termini
fungus	fungi
effluvium	effluvia
vertebra	vertebrae
erratum	errata
cactus	cacti
radius	radii
medium	media
memorandum	memoranda
automaton	automata
formula	formulae
bacterium	bacteria
curriculum	curricula
criterion	criteria
stadium	stadia

The National Iron & Wire Co., Cleveland, has been awarded the contract to furnish 800 tons of structural material for the large addition which the National Acme Mfg. Co. is erecting to its plant in that city.



General View of Atikokan Iron Co.'s Plant, Port Arthur, Ont.

PLANT OF THE ATIKOKAN IRON CO., PORT ARTHUR, ONT.

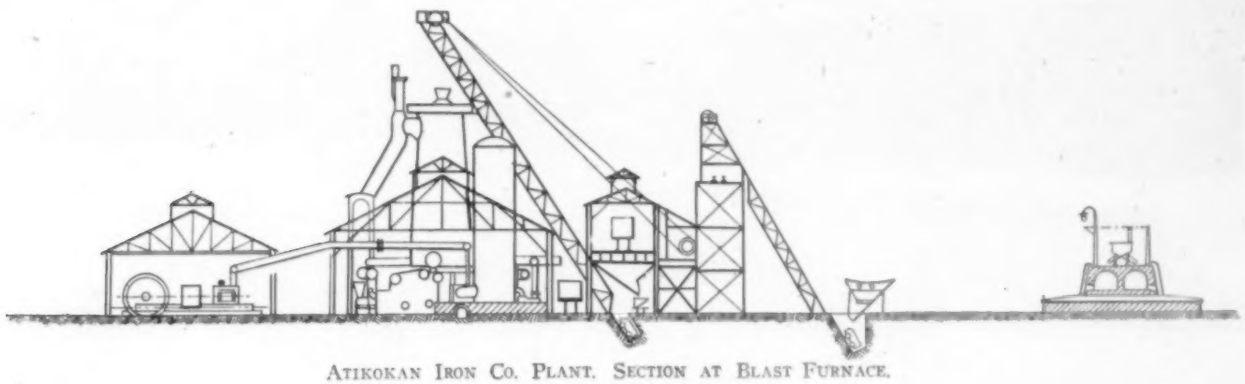
Considerable attention has been given during recent years to the extensive deposits of magnetic iron ore which exist in the province of Ontario, Canada, north of Port Arthur. Various projects have been advanced for the development of these deposits but the first to enter the field as an operating company is the Atikokan Iron Co., Ltd., of Port Arthur. The ore properties owned by this company are known to contain at least 5,000,000 tons, the deposits being well situated for mining and transportation. The ore body consists of several veins varying in sulphur and phosphorus content. Some of the veins carry ore which can be used in the blast furnace without roasting, while other veins will require roasting before they can be utilized.

The developments which the company has in view have been begun by the erection of a blast furnace plant and auxiliary equipment at Port Arthur. The works are now approaching completion and it is expected that the furnace will be placed in operation during the early summer.

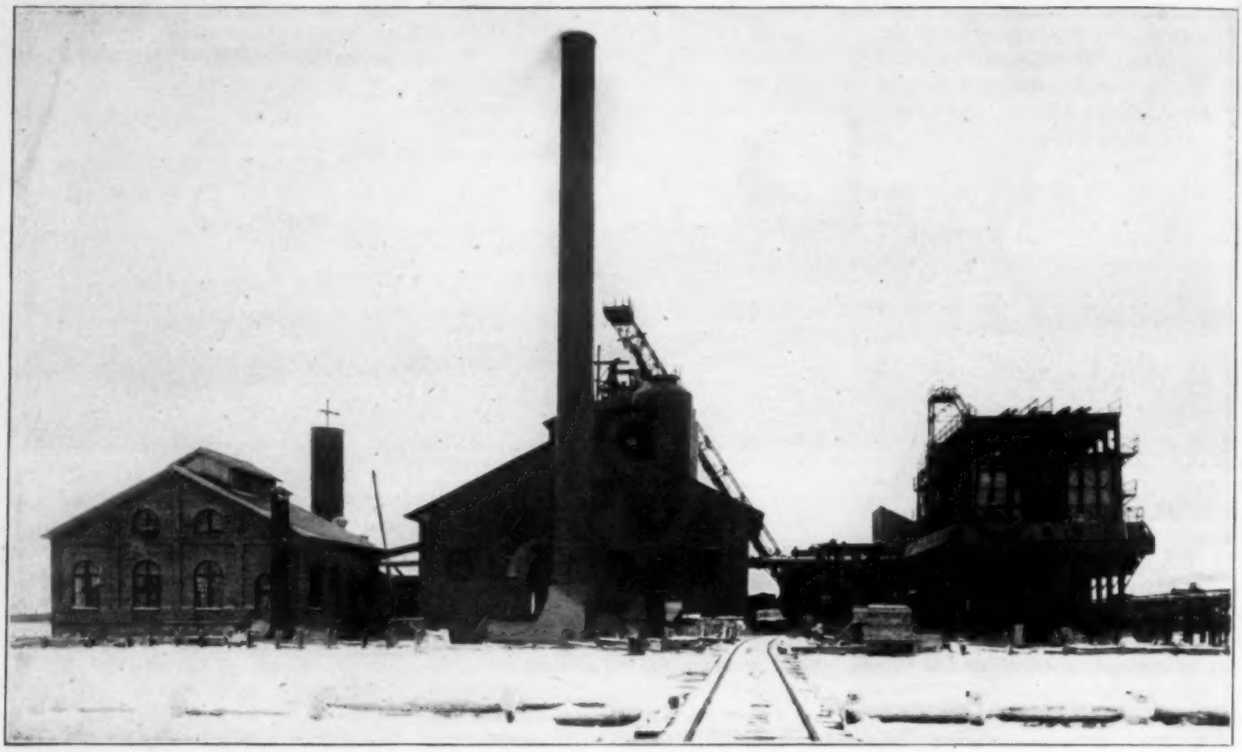
The plant is located at Port Arthur, Ontario, Canada, and comprises a blast furnace, roasting kilns and coke ovens, the general arrangement being shown in the accompanying illustration.

The advantages of roasting magnetic ores, whether they contain sulphur or not, having been determined at the Wharton furnaces in New Jersey, it was deemed advisable by the company to provide roasting kilns of a capacity sufficient to treat all the ore supply required by the furnace. The type of roaster adopted is that in use by the Wharton furnaces, the Lebanon furnaces in Pennsylvania, Bolckow, Vaughan & Co., Ltd., of England and the Frodingham Iron & Steel Works in England.

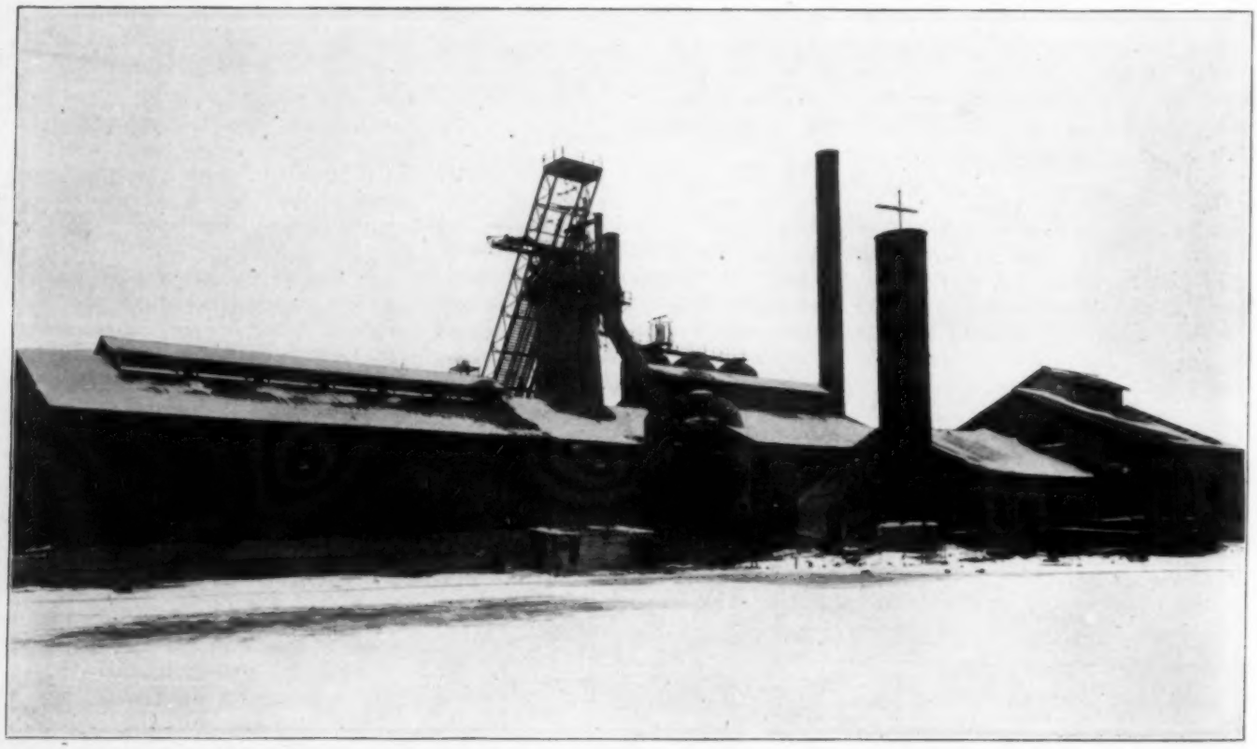
The fuel used in this type of roaster is the waste gas of the furnace, a condition which renders necessary the adoption of economical engines, pumps, etc., in order to save gas at the power plant. The gases are consumed in a combustion chamber; the products of combustion passing through the ore to the chimney chamber from whence they are drawn by an exhaust fan delivering into a chimney. The use of the exhaust fan for creating the draft enables the latter to be varied according as the ore to be roasted is coarse or fine, the latter requiring a greater draft than the former. In the design adopted at Port Arthur, the ore is elevated to the top of the roaster by means of a skip hoist, discharged into an automatic railway truck of the Mead-Morrison type and thence delivered in bins on top of the roaster. The ore "self feeds" from the bins into the roasting chambers as the roasted ore is drawn out of the roaster at the bottom. Bins are also provided at the bottom of each roasting chamber, the ore being delivered therefrom into electrically operated stock transfer cars which in turn deliver the roasted ore to the furnace skip hoist. The bottom of the roaster is also designed so as to permit the delivery of roasted ore into ordinary railway cars for shipment. The roaster and equipment are arranged to permit additional roasting chambers being erected at a



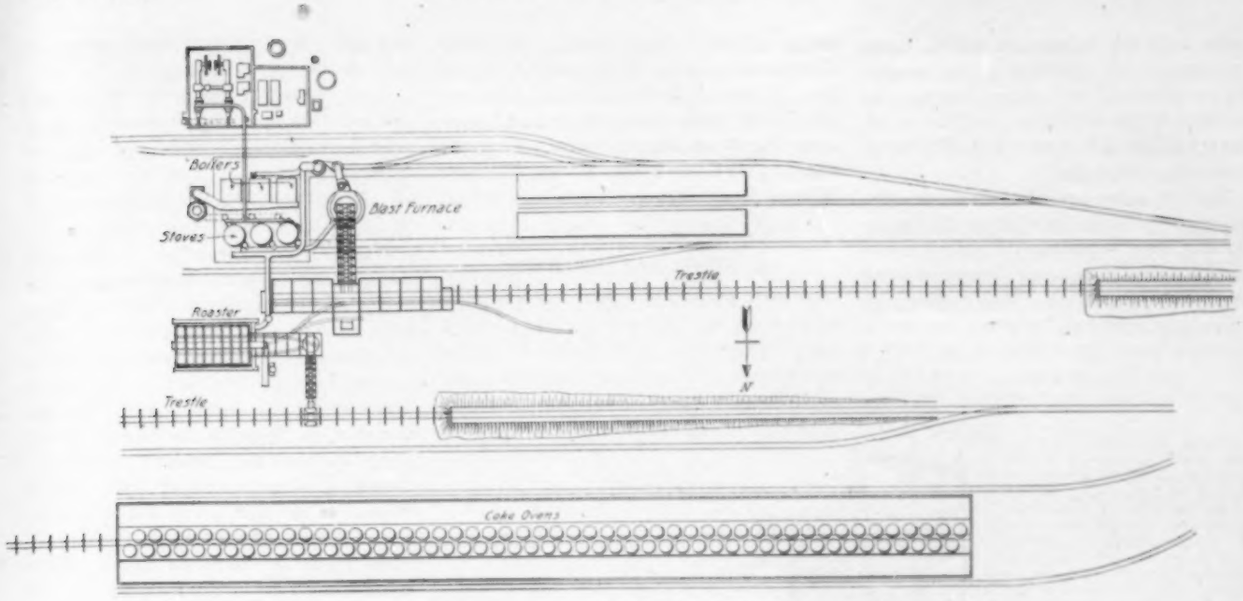
Atikokan Iron Co. Plant. Section at Blast Furnace.



ATIKOKAN IRON CO.—ENGINE, BOILER, AND STOVE HOUSES, STOCK BINS AND ROASTER.



VIEW OF ATIKOKAN IRON CO. PLANT, LOOKING TOWARD ENGINE HOUSE.



PLAN OF THE ATIKOKAN IRON CO. PLANT.

later time, the hoisting equipment being of ample capacity to meet possible requirements.

In view of the difficulties and expense attendant upon the transportation of coke, it was decided to build a plant of coke ovens and owing to local conditions, the bee hive was found to be the most desirable type of oven. The coking plant consists of 100 ovens, twelve feet three inches diameter, the working platform being located 5 feet ten inches above the yard level. Coal is delivered to the works by vessel, coal pockets being provided to deliver the coal to the electrically operated larries, leading to and over the coke ovens as indicated. The coke will be loaded on special railway cars and transferred over and discharged into the coke bins in the furnace stock house. The furnace plant proper and its equipment is designed so that for a comparatively small additional cost the plant will be capable of producing 200 tons per 24 hours. At present, the furnace is lined down to a capacity of 100 tons per day, the purpose being to increase the capacity to 200 tons per day for its second blast.

The furnace proper consists of the modern construction of a steel shell carried on cast iron columns, the bosh being furnished with bronze cooling plates of the Scott design. The furnace charging apparatus consists of a double skip hoist and a sealed top of the Roberts revolving type. The furnace is 75 feet in height and is at present lined to 14 feet diameter at the bosh and eight feet six inches diameter at the hearth. The construction of the furnace will however permit a bosh of 17 feet diameter and a hearth of 11 feet diameter.

The hot blast equipment consists of three Roberts-Cowper stoves, 18 feet diameter and 70 feet in height. The boiler plant embraces four water tube boilers of 200 horsepower each, manufactured by the Canada Foundry Co., Ltd. The blowing engine is a disconnected cross-compound, condensing horizontal engine built by the Southwark Foundry & Machine Co. The design of the engine is such that either the high or the low pressure side of the engine may be operated as an independent engine. The air supply to the engine is taken from the outside of the engine house. The condenser is arranged to operate with the waste water discharged from the furnace and stoves or with lake water. The water circulating and boiler feed pumps are both in duplicate.

The stock bin equipment consists of one large coke bin discharging directly into the furnace skip cans and five bins to discharge into an electrically operated transfer weigh car which delivers the material to the skip hoist. As before stated, this transfer car also transports the roasted ore from the roaster to the skip hoist. Since ore bins are provided at the bottom of the roaster, it is not necessary to provide a large number of ore bins in the stock house; for this reason, it is the intention to utilize but two of the stock house bins for ore, these

ATIKOKAN IRON CO. PLANT.—END ELEVATION.

being sufficient to provide against interruptions in the operation of the roaster. As distributed, the storage capacity of the bins in the stock house will be as follows: Coke 250 tons; ore 500 tons; limestone, 175 tons.

The bin gates are of the pivoted type, operated by levers carried on the transfer car, thus avoiding the expense and complication of separate levers at each gate. Both the furnace and roaster skip hoists are operated by steam engines.

It has been the intention to build a plant capable of being operated in the most economical manner. Fuel and labor economy are naturally important elements in a manufacturing plant so far removed from the centers of population and it is believed that these requirements have been fully satisfied within the natural limits of the problem.

The plant has been built under the designs and inspection of Frank C. Roberts & Co., of Philadelphia, the construction being carried on under the supervision of Robert R. Jones, superintendent. The officers of the company are as follows: President, D. D. Mann; vice president and manager, J. C. Hunter; secretary, R. M. Hunter; treasurer, Hugh Sutherland. The directors are William Mackenzie, president Canadian Northern railway, Toronto; D. D. Mann, vice president Canadian Northern railway; L. A. Lash, counsel Canadian Northern railway; Hugh Sutherland, Canadian Northern railway, Winnipeg; A. Stamford White, A. S. White & Co., Chicago, Ill.; J. W. deC. O'Grady, general manager Northern Bank, Winnipeg; R. M. Hunter, J. C. & R. M. Hunter, Duluth, Minn.; J. C. Hunter, Port Arthur.

A NEW GAS ENGINE.

A new gas engine has recently been placed on the market by the Lazier Gas Engine Co., Buffalo, N. Y. It is the design of Arthur A. Lazier, formerly of the Lazier Engine Co. He recently disposed of his entire interest in that company and withdrew to organize the Lazier Gas Engine Co. to manufacture the engine illustrated herewith. In the engine illustrated in Figs. 1 and 2, the valves are operated mechanically and a double system of ignition is employed. This is so arranged as to be run either separately or in combination and the time of firing the charge can be changed while the engine is in operation. Another feature of the engine is that the cams and cam shaft run in oil but are in plain sight of the operator at all times. The gears employed on the cam shaft are spiral gears running in oil, insuring noiseless operation. An extended take-up is provided on the connecting rod to compensate for lost motion. A splash system of lubrication is employed and all the engines are provided with automatic self starters.

The engine is designed to operate on any kind of fuel—alcohol, kerosene, distillate, illuminating gas or producer gas. The engine is made in all sizes from 2 to 300 horsepower.

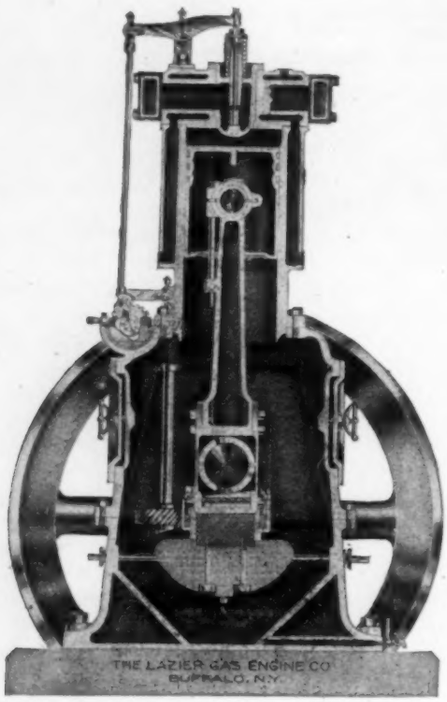


FIG. 1.—END SECTION, LAZIER GAS ENGINE.

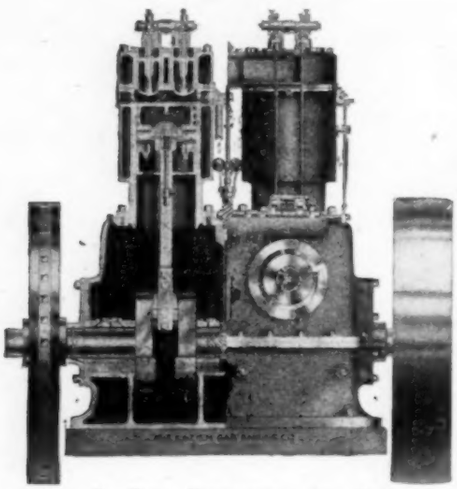


FIG. 2.—SIDE ELEVATION AND SECTION, LAZIER GAS ENGINE.

Will Visit Plant.—The latest addition to the present manufacturing capacity of the factories of the S. Obermayer Co., Cincinnati, is its new plant at Rillton, Pa. This addition makes a total of five factories now being operated by the company for the manufacture of foundry facings and supplies located at Cincinnati, Chicago, Pittsburg, Larimer, Pa., and Rillton. The town of Rillton is only a short distance out of Pittsburg, and is located right in the heart of the Westmoreland district at the line of the Pennsylvania railroad. As guests of the Obermayer Co., the Pittsburg Foundrymen's Association will have the opportunity in June of inspecting the modern plant at Rillton. A special train has been chartered to take the foundrymen to the plant and the trip promises to be a most enjoyable one.

The Caldwell Bit & Tool Co., Ltd., of Toronto, has been incorporated with $50,000 capital, the provisional directors being Charles A. Seguin, Wm. F. McRae, James C. Mitchell, Chas. W. Mitchell and Wm. Kelly.

Anson F. Harrold, president of the American Transformer Co. of Newark, N. J., died recently at Barrington, R. I. He was the inventor of the electrical transformer manufactured by the company, of which he was the head.

EXPENSE: DEPARTMENTAL DISTRIBUTION.[1]

By F. E. Webner.[2]

When the manufacturing expense has been analyzed to the various and several accounts composing it each of such accounts will need to be taken independently and subdivided over the departments benefited by such class of expense. To accomplish this a sheet with a number of columns can be utilized; the first column to show the total amounts of the several classifications and the remaining columns to be given to the various and several departments of the works which, the writer suggests, should, as nearly as possible, conform to the following: 1, Casting cleaning; 2, planing; 3, scraping; 4, turret machines (hand and automatic); 5, lathe; 6, milling; 7, drilling; 8, chasing; 9, grinding; 10, polishing; 11, fitting and assembling; 12, painting.

The basis for distribution between departments must necessarily differ according to the nature of the classification and a brief outline is here given as to the various methods which may be used. Executive salaries and expenses should be charged on a basis of average productive hours used in the various departments as compared to the total number of productive hours in the entire plant for the period. Superintendents' time can be charged in like manner or on a basis of efficiency of foremen; some foremen requiring little or no watching while others require a great deal of watching and instructing. Draughtsmen can be charged on an arbitrary division based on past experience as to what general proportion of time the particular department contributes to a finished machine. Time and cost should be charged department on the productive hour basis, and purchasing department costs and store department on a basis of average material and supplies used as compared to the total thereof. Shipping department is charged on the productive hour basis.

Under non-productive labor the first item is tool making and repairing which can be distributed proportionately among the departments benefited; usually on a basis of machines in such departments; pattern makers, inspectors, carpenters, painters, porters, truckers, elevator men and packers are charged on a productive hour basis, and millwrights on a basis of average service rendered. Engineers and firemen are distributed on a basis of horsepower used by the various departments as nearly as can be determined with also a small apportionment covering cost of heat and electric light service on a basis of space and lamps respectively.

Under the maintenance group we have, first, factory buildings which can be spread over the several departments on a basis of space occupied; power plant and electric plant spread equitably over departments in the proportion in which they receive benefit; shafting, hangers, and belting are distributed on a basis of money invested, also the same with the machine tools, small tools, jigs and templates, shop furniture and fixtures and miscellaneous shop equipment, maintenance of patterns is to be charged on the productive hour basis.

Under the depreciation group we get first, machine tools and in that connection the question naturally arises as to what percentage of depreciation should be charged off each month, but as that is purely an engineering proposition the writer will not here attempt to outline that feaure as, suffice it to say, that under whatever plan is followed the various departments should receive a charge for no more or no less than for the machines in such departments; however, this amount having been determined at the first of the year need not be disturbed until new machines are added or changes made. Small tools, patterns, jigs and templates, factory buildings, power plants, etc., are distributed under the same plan as stated under "maintenance."

Under the miscellaneous group we have rent, (where concerns own their own power plant the equivalent is interest on investment) which can be equitably spread on the basis of space used, with proper consideration for choice locations. Taxes are spread in the same manner. Insurance is distributed on a basis of average amount invested, and water, light and fuel according to the benefits derived by the various departments. Pattern and packing material, patent and law costs, strike defense and association costs and experimental work all charged on the productive hour basis, and incoming freight, express and drayage on the average material and supplies used by the various departments. Where this is not feasible, the item can be spread on a basis of quantities used, as based on tests from time to time. The factor of safety charges should be spread on the productive hour basis, as should also any miscellaneous manufacturing expense.

Having thus distributed all the items each departmental column can be added and the total will be the net charge to such department for diffusion over product. As the sum of all the parts must equal the whole, so the total of all the departments must equal the total manufacturing expense and no entries should be made until the figures are correct.

[1]Ninth of a series of articles on cost keeping.
[2]Certified public accountant, Cincinnati.

FOREIGN TRADE OPPORTUNITIES.

(These inquiries from prospective foreign purchasers are furnished by American consuls to the Government Bureau of Manufactures, Department of Commerce and Labor. Those in which the addresses are omitted are on file at the Bureau of Manufactures, Washington, D. C. In applying for addresses refer to the file number.)

No. 816. Railroad supplies.—An American consul in a Latin-American country furnishes the addresses of the officials and building contractors connected with a new railway company to whom letters should be addressed relative to selling railway materials and supplies.

No. 817. Laundry machinery.—An American consul in a large Spanish-American city, where no steam laundries have yet been established, furnishes the address of a business man who is willing to take an agency for the sale of American laundry machinery.

No. 819. Brick-making equipment.—It is the intention of an Asiatic concern to at once erect factories at several cities for manufacturing bricks and although it had thought of adopting an European system, will consider American equipments.

No. 823. Wood-working machinery.—Consul Gebhard Willrich, of St. Johns, sends the name of a new company just organized to manufacture hardwood flooring, and hammer and hatchet handles, and is in the market for machinery. Mr. Willrich also furnishes a list of importers and buyers of wood-working machinery.

No. 824. Agricultural implements.—Consul-General T. St. John Gaffney reports that the German farmer, although conservative, is awakening to the importance of using efficient implements, and that there is a large field for these in Germany, especially for those suited to small farms. Mr. Gaffney furnishes the name of the largest manufacturer and agent for agricultural implements in Dresden.

No. 813. Coal-weighing machines.—The Commercial General Agency (Limited), post-office box 784, Pretoria, South Africa, writes as follows to the *South African Export Gazette:* We shall be glad to receive catalogs and price lists (f. o. b.) of coal-weighing machines which fold under coal wagons similar to those used when delivering coal in England. The compulsory weighing of coal on delivery will shortly be adopted here, owing to the Weights and Measures Act coming into force.

No. 881. Agricultural implements.—A company has obtained the lease of 2,500 acres of fertile farming land in Asia and are about to attempt the cultivation on a large scale of hay, oats, wheat, sugar beets, etc. They are desirous of entering into correspondence with large American manufacturers and exporters of agricultural implements and machinery with a view to placing big orders, and also of becoming agents for the sale of same in that region.

No. 888. Dredging equipment.—The Harbor Board of Skien and Porsgrund, Norway, propose the expenditure of over $100,000 for deepening and widening the river to make Skien accessible for much larger vessels.

No. 889. Harbor and railway construction.—The Government Gazette of Southern Nigeria, Africa, announces that the Legislative Council has approved the following proposed expenditures: $750,000 on a mole 3,800 feet long on the eastern side of the entrance to Lagos Harbor; $250,000 on the lengthening and strengthening of the government customs wharf; $250,000 for the purchase of a dredger (including delivery at Lagos) for work on the bar, and $1,750,000 for extending the railway to Ilorin.

No. 844. Shoe machinery.—A foreign shoe manufacturing firm has obtained a contract to furnish army shoes for 20,000 men. The firm has inquired at an American consulate about modern factory equipment, and would like to correspond with American manufacturers of shoe machinery desiring prices, catalogs, and shipping information.

No. 846. Farm machinery.—Consul F. S. S. Johnson, of Bergen, suggests to American firms desiring to establish the sale of agricultural machinery and tools in Norway that they correspond with a Norwegian firm, a prominent member of which was a resident of the United States and takes a great interest in American goods.

NEW ENGLAND INDUSTRIES.

(Special Correspondence.)

Worcester, Mass., April 24.—J. B. Stewart, superintendent of the Boston & Albany railroad, is to retire from railroading to become president of a Boston company, that will engage in the manufacture of a new, practically frictionless, copper bearing for machinery. This new bearing is a result of a valuable discovery of a process of treating copper to give it high tensile strength as well as quality to resist wear. Actual tests on locomotives and stationary engines show that the product is practically frictionless, making it invaluable for bearings. When questioned about the matter, Mr. Stewart said: "There is no alloy in it. It is pure copper. An engine bearing made of this metal was tested on a Boston & Maine freight engine for two years and nine months, and the officials stated that it was superior to anything they had ever used."

After forty-two years of service as master mechanic in the Cordis mills, Lucius A. White of Millbury, Mass., retired to private life April 6. He has the reputation of being one of the most efficient men in his line in any mill in this section.

The Mutual Benefit Association of the North works of the American Steel & Wire Co., Worcester, held its first annual banquet Saturday night, April 6. ninety members being present. E. L. Smith presided and outlined the growth of the association. James D. Southerland was toastmaster. The committee of arrangement was A. C. Morley, F. F. Truesdall, George Trott, E. C. Heratz, and F. A. Curney.

The Foundry Equipment Co., of Worcester, has been organized with an authorized capitalization of $20,000. It was organized for the purpose of making furnishings for foundries. The officers are Edward E. Waite, president; William B. Scofield, treasurer; George Compton, clerk; Edward D. Thayer and Randolph Crompton, directors.

The annual meeting of the Worcester County Mechanics Association was held April 9. The old board of officials was re-elected as follows: President, John A. Sherman; vice president, Charles E. Burbank; and William A. Smith, clerk.

John McIntosh has been made master mechanic of the Crompton & Knowles Loom Works, Worcester, taking the place of George H. Nutt, who had served in the same capacity for several years, but was incapacitated by illness.

Hiland R. Farnsworth, of the Turner's Falls Machine Co., has taken a position as superintendent of a machine shop at Sandusky, O.

E. and T. Fairbanks & Co., St. Johnsbury, Vt., are building an addition to their foundry, 75 x 100 feet.

The new service unit of the Worcester Polytechnic Institute is being installed in the power house. It consists of a 350-horsepower Erie Ball compound engine and a 200-kilowatt Crocker-Wheeler two-phase generator, the generator being mounted between the high and low pressure cranks.

The three new buildings representing the new plant of the Robin Hood Powder Co. at St. Albans, Vt., which will be ready for occupancy this summer, are of steel frame work and solid cement construction. The cost runs close to $100,000.

The New England section of the American Chemical Society will meet May 18 in Worcester at the Worcester Polytechnic Institute. The object of the meeting, in a large measure, is to visit the various industrial plants of Worcester, this city being a special object of interest in that it ranks as the first city in the world in variety of manufactured products.

For the purpose of building an addition to its plant, the Warren Steam Pump Co., Warren, Mass., is to issue $100,000 in bonds, in such amounts as may be necessary for the work. The plans for the addition call for an exact duplicate of the present building, 85 feet by 160 feet, to be of brick mill construction. It is expected the building will be ready for use within four months.

AMONG PENNSYLVANIA INDUSTRIES.

(Special Correspondence.)

Harrisburg, Pa., April 25.—The Pittsburg Industrial Iron Works Co. has started operations on the old Huntingdon Car Co. shops, formerly the Keystone Boiler & Radiator Works at Huntingdon. The purchase of the works was made early in the year.

The E. B. Leaf Co. will rebuild its Spring City bloom works, which were destroyed by fire recently.

The Carpenter Steel Co. is adding new heating furnaces to its Riverside plant at Reading. Three shifts of men are at work.

The Lebanon Chain Works has taken a number of additional orders for chains and buoys for the United States government. The plants at Lebanon are now controlled by the above company, it having recently secured the West End Rolling Mill & Chain Works. Eli Attwood is president.

The new Keystone Steel Casting Co., recently incorporated to build a plant at Chester, is erecting a modern foundry. A. G. Lorenz is president.

The name of the George C. Unger Hardware Co., of Lebanon, was recently changed to Central Hardware Co. Eli Attwood is president and Henry Zerman, secretary.

The property of the Sloan Iron Co., near Reading, was bought in by W. E. Spruence Jr., of Philadelphia, at sheriff's sale recently. The property included three tracts of land.

Part of the plant of the Kemmerer Iron & Steel Co., at Scranton, started recently on bar iron. About 150 men are employed.

The Delaware county commissioners have awarded Darby creek bridge to the Toledo-Massillon Bridge Co.

The Ferro-Concrete Co., of Philadelphia, has been given the contract for the new Jefferson bridge in Berks county.

The recent purchases of the iron ore lands of the Boyerstown Iron Co. by Bethlehem Steel Co. interests have aroused interest in ore lands and prospecting is going on in Lehigh, Montgomery and Luzerne counties. A large shaft is being sunk on Nescopeck mountain, near Hazleton.

The Jeanesville Iron Works Co., of Luzerne county, Pa., has been awarded contracts for thirty pumps for United States government irrigation service.

The Manufacturers' Foundry Co., of near Reading, is enlarging its plant to handle soft gray iron and stove castings.

Activity among the furnaces in central Pennsylvania continues and some of them are showing a large production. No. 3 Steelton, which was recently repaired, made 313 tons one day a couple of weeks ago, and Lebanon Valley has gone ahead of all its records. Nittany furnace at Bellefonte has blown in after repairs. The Thomas Iron Co. has blown out one of its furnaces at Lock Ridge, Pa., for repairs. The Reading Iron Co. will soon start its Keystone furnace at Reading, Pa.

The State Board of Public Buildings and Grounds at Harrisburg, Pa., may ask for bids for erection of bridges this year if reports of viewers on sites in Lycoming and Luzerne counties are approved.

The Patton heirs have leased a plot of land comprising large ore deposits and lime stone in Huntingdon county near Warrior's Mark, Huntingdon county, Pa., to the Altoona Sand & Iron Ore Co., which will develop it.

The Charles Bond Co., of Philadelphia, to manufacture and deal in mill and machinists' supplies, has been chartered by the State of Pennsylvania with $10,000 capital. The incorporators are: Charles Bond, Ashbourne; Joseph Burr, Atlantic City, and William E. Bryce, Philadelphia.

Movement of Stocks Remains Irregular.

Another week of irregular and desultory trading has been displayed by the movement of securities. The operations in the market during the past week were narrow and professional, indicating an indecision on the part of the investing public to assume any ventures under prevailing conditions. What action has been noted in the market has been generally toward higher levels, but these increases have been so small as to appear insignificant in the eyes of large traders who are continually on the alert for sharp changes in prices. Though the monetary situation has been greatly bettered, particularly in the past week by the reduction of the official discount rates by the Imperial Bank of Germany, the Bank of Netherlands and the Bank of England, yet it is believed that financial conditions are by no means settled. Practical evidence of this fact is given in the conditions that arise whenever any railroad desires to raise a large loan. The road invariably has to pay a stiff price for this money and even the syndicate which undertook to float the 4 per cent debenture bonds of the Lake Shore has had a large proportion of the securities left on its hands owing to lack of demand for them. The railroads, the crops and politics are now regarded as the three elements of uncertainty in the business situation, and large traders are carefully noting developments along these lines. The New York bank statement was favorable. Although the banks increased their cash reserve only about $150,000, the surplus reserve was increased $641,950. The reserve requirement was lowered $500,000 by a decrease of $1,980,000 in the deposits. Against this decrease in deposits, loans were contracted $1,587,000. The change in the reserve surplus gives the banks $12,346,000 in excess of their legal requirements, as compared with $10,367,000 a year ago, and $16,655,000 two years ago. Transactions on the New York exchange during the week amounted to 3,421,000 shares, against 3,218,400 shares last week and 7,482,400 shares the corresponding week of last year.

Financial Notes.

The Chicago Pneumatic Tool Co., in its statement for first quarter business of 1907, shows a gain of $22,196 in its net profits, which aggregated $255,528, an increase of $15,816 in its balance available for dividends, which amounted to $184,061, and a gain of $15,816 in its surplus after the deduction of dividend disbursements which reached $110,474. Depreciation charges involved $42,717, or $6,390 more than those for the corresponding period in 1906. Bond interest was $28,750, the same as last year, and the amount set aside for the sinking fund was $12,500, the same as that devoted to this item last year.

Announcement has been made that the Westinghouse Electric & Machine Co. would offer $5,000,000 assenting stock to stockholders of record May 4. The par value is $50 a share and the price at which it will be put out is $75.

Recent dividend declarations include the following Pressed Steel Car Co., regular quarterly dividend of 1¾ per cent on the preferred stock, payable May 22; J. G. Brill Co., initial dividends of 1¾ per cent on the preferred stock, payable May 1, and 1 per cent on the common stock, payable June 1; Buckeye Steel Castings Co., regular dividends of 1½ per cent on the preferred stock, and 1 per cent on the common stock, payable May 1; Ralston Steel Car Co., initial quarterly dividend of 1½ per cent on the preferred stock, payable May 1.

The compilation of the May dividends which 73 corporations have announced they will pay during that month shows that $22,888,646 will be disbursed. Eighteen industrial corporations will pay out $7,062,220. Though those figures are the smallest of any month of the year, they are considerably larger than for May, 1906.

The Skinner Chuck Co., New Britain, Conn., has filed an increase of capital stock, from $75,000 to $225,000.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Apr. 20	Changes In Week	Date 1907 Ann. Meet.	Stock Outstanding	Dividend Basis	Dividend Being Paid	Dividend Date Last Div. Pay.
Allis-Chalmers	12⅛	+1⅛	Sept.	19,820,000			
Allis-Chalmers pr	53	+3⅜		16,150,000	7 cum		Feb., 1904
American Can	6	− ⅛	Feb.	41,233,300			
Am. Can pr	56	−1¾		41,233,300	7 cum	5 Q.	Apr., 1907
Am. Car and Fdy	37¾	+1⅛	June 27	30,000,000		2 Q.	Apr., 1907
Am. Car and Fdy pr	99			30,000,000	7 n. c.	7 Q.	Apr., 07
American Loc.	62¼	− ¾	Oct. 5	25,000,000		1¾	Feb., 1907
American Loc. pr	105			24,100,000	7 cum	7 Q.	Apr. 1907
American Ship.	73		Oct. 2	7,600,000	6	1 Q.	Mar. 1907
American Ship. pr	105			7,900,000	7 n. c.	1¾ Q.	Jan. 1907
Am. Steel Foundries	8¾	− ⅛	Oct. 1	15,810,000			
Am. Steel Foundries pr	39			17,240,000	6 cum		Aug., 1904
Barney & Smith	72		June 4	2,000,000	4	4	Mar., 1907
Barney & Smith pr	130	−1		2,500,000	8 cum	8 Q.	Mar., 1907
Bethlehem Steel	12		April 2	14 862,000			
Bethlehem Steel pr	49			14,908,000	7 n. c.	5 Q.	Feb., 1907
Cambria Steel	39	+2	Mar. 19	45,000,000*	6	3 Q.	Feb., 1907
Cambria Iron	47¼	+ ⅛		8,468,000*	4	4 S. A.	Apr., 1907
Chicago Pneumatic Tool	41⅛		Feb. 18	6,145,800	4	4 Q.	Apr., 1907
Colorado Fuel	36	+1	Oct. 21	30,132,000			Apr., 1902
Crucible Steel	9⅝	+ ⅝	Oct. 16	24,578,400			
Crucible Steel pr	72¾	+ ¾		24,436,500	7 cum	6	Mar., 1907
Empire Steel	9		Feb. 27	2,281,400			
Empire Steel pr	50			2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	100	+5	Feb. 19	1,000,000	6	7 Q.	Feb., 1907
Fay & Egan pr	128½			1,000,000	7 cum	7 Q.	Feb., 1907
General Electric	147⅜	+ ⅛	May 14	63,643,600	8	8 Q.	Apr., 1907
Harbison-Walker	11	+1	Jan. 21	18,000,000	6		
Harbison-Walker pr	74			9,600,000	6 cum	6 Q.	Jan., 1907
International Pump	29	+ ⅛	June 4	17,762,500		2	Apr., 1905
International Pump pr	79			11,350,000	6 cum	6 Q.	May, 1907
Lackawanna Steel	50		Mar. 13	34,971,400			
Lake Sup. Corp	8		Oct. 2	40,000,000			
New York Air Brake	119¾	+3	June 18	10,000,000	8	8 Q.	Apr., 1907
Niles-Bement-Pond	130		Feb. 6	5,000,000	6	6 Q.	Mar, 1907
Niles-Bement-Pond pr	105			2,000,000	6 cum	6 Q.	Feb., 1907
Otis Elevator Co.	36		March 18	6,350,300		3 A.	Apr., 1907
Otis Elevator Co. pr	91			6,308,500	6 n. c.	6 Q.	Apr., 1907
Penn. Steel	65		May 13	10,750,000			
Penn. Steel pr	99	−2⅜		16,500,000	7 n. c.	7 S. A.	Apr., 1906
Pittsburg Coal Co.	11⅞	+ ⅜	Feb. 11	32,000,000			Nov.
Pittsburg Coal pr	55			32,000,000	7		Apr., 1905
Pressed Stl. Car	35¾	− ⅛	Feb. 20	12,500,000		3	Aug., 1904
Pressed Stl. Car pr	93¼	− ¾		12,500,000	7 n. c.	7 Q.	Feb. 1907
Pullman	168		Oct. 17	100,000,000	8	8 Q.	Feb., 1907
Railway Stl. Spring	44	+ ⅛	Mar 7	13,500,000		4 S. A.	Mar., 1907
Railway Stl. Spring pr	83¼			13,500,000	7 cum	7 Q.	Mar. 1907
Rep. Iron & Steel	28⅞	− ¼	Oct. 9	27,191,000			
Rep. Iron & Steel pr	85			20,416,900	7 cum	7 Q.	Apr., 1907
Sloss-Sheffield	53¾	+ ¼	Mar. 5	10,000,000	5	5 Q.	Oct., 1906
Sloss-Sheffield pr	100			6,700,000	7 n. c.	7 Q.	Apr., 1907
Tenn. Coal & Iron	146¼	+1	May 7	22,553,060	4	4 Q.	May, 1907
U. S. Pipe & Fdy	37⅜	+1⅜	June 26	12,500,000	4	4 Q.	Dec., 1906
U. S. Pipe & Fdy. pr	84½	+4		12,500,000	7 n. c.	7 Q.	Dec., 1906
U. S. Steel	37½	+ ⅛	April 15	508,302,500	2 n. c.	½ Q.	Mar., 1907
U. S. Steel pr	101⅛	+ ⅞		360,281,100	7 cum	7 Q.	Feb., 1907
U. S. Steel 5's	99⅝	+ ⅝		463,798,000	5	5 A.	
Va. Iron, Coal & Coke	70	−3	Sept. 17	8,641,600			
Westinghouse Elec.	144¾	−1⅛	July 24	24,998,700*	10	10 Q.	Apr. 1907
West'ghouse Air Brake	150		Oct. 1	11,000,000*		22½ Q.	Jan., 1907

Par value of shares, $100, except those starred, $50.

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The Ackerson Creek Mining Co., Bristol, Conn., has been incorporated by W. L. Umbarger and W. E. Umbarger, of Chilhowie, Va., and S. V. Fulkerson, of Bristol.

The Twentieth Century Brass Works, Houston, Tex., has been organized with a capitalization of $5,000 by Henry S. Fox Jr., A. Dougherty and Louis Appelbaum.

The El Starr Mfg. Co., Milwaukee, Wis., has been chartered with an authorized capital stock of $12,000 by Louis Bertane, Leonard B. Sairs and Edward G. Buchmann.

The Hall Cutter Head Co., Waukegan, Ill., has been organized with a capitalization of $2,500 to manufacture metallic specialties by J. F. Roomer, R. W. Coon and Fred Bishoff.

The Berry Machine Co., St. Louis, has been chartered with an authorized capital stock of $10,000 by Benjamin F. Berry, Edgar B. Woodward, Walter B. Woodward and Louis B. Woodward.

The Walton Foundry Co., Walton, N. Y., has been incorporated with a capital of $10,000 by Herbert Shaw, George H. May, John Bryce, Lloyd G. Gallup and William F. White, all of the above address.

The Vance Boiler Works, Geneva, N. Y., has been chartered to manufacture boilers, furnaces, etc., with a capitalization of $30,000. The incorporators are: Bernard Borgman, Charles H. Sweeney, Mary Borgman and Thomas A. Kane, all of the above address.

The Crown Iron Works, New York, has been incorporated to manufacture structural iron and metal work. The capital stock of the company is $5,000, and the incorporators are: Albert W. Givens and John V. Givens, Plainfield, N. J., and William L. Lehn, 241 St. Nicholas avenue, Brooklyn.

The Taylor Foundry & Machine Co., Westerville, O., has been organized to erect a foundry at that place. Burr Linnabary has been chosen president, W. C. Bale, secretary, and Frank Culver, treasurer. These and J. W. Everal, E. S. Williams and A. C. Hood constitute the board of directors.

The Freeport Mfg. Co., Freeport, Ill., has been organized and will engage in the manufacture of machinery and gas engines. The capital stock of the company is $15,000, and the officers chosen are: F. Dorman, president; A. G. Hoefer, vice president, and Charles Hufford, assistant superintendent.

The Hexagon Tool Co., Niagara Falls, N. Y., has been organized to manufacture lathes and machinery. The capital stock of the company is $10,000, and the incorporators are: Alden D. Clark, Toronto, Can.; R. Porter Lee, Buffalo, N. Y., and John Wight, Brooklyn, N. Y.

The T. W. Dorsett Co., office 1113 Clinton street, Hoboken, N. J., has been incorporated with a capital of $30,000 to manufacture galvanizing iron, roofing and metal materials by Timothy W. Dorsett, 69 North Walnut street, East Orange, N. J.; Albert Villaret, 327 East Eighty-third street, New York, and Jessie L. Dorsett, 69 North Walnut street, East Orange, N. J.

The United States Meter Co., Brooklyn, has been formed with a capital of $100,000 to manufacture meters for water, gas and electricity. The incorporators are: Howard Marwell, 182 Congress street; John G. Buchler, 178 Somers street; James Grady, 1075 Halsey street; Philip Ranch, 96 Linwood street, and E. R. Ellsworth, 774 Flatbush avenue, all of Brooklyn.

New Construction:—

The Allyne Brass Foundry Co., Detroit, is erecting a one-story brick foundry building to extend its plant.

The directors of the Capital Lock-Nut & Washer Co., Columbus, O., are considering the advisability of erecting a large addition to their plant in that city.

James Gurney & Co., 202 Border street, East Boston, Mass., report that the main loss of their recent fire was in patterns. The machine shop, which was somewhat damaged, is being repaired.

Joseph Sutton Jr., New Orleans, has just completed a new addition to his foundry and structural works in that city. The building is of brick, 85 x 150 feet, and is equipped with the latest improved machinery.

The Seneca Chain Co., Mansfield, O., is planning to erect a plant in that city. The buildings that will be erected consist of a main brick structure 60 x 200 feet, one story, and two forge buildings 42 x 228 feet, one story.

The Fedders Mfg. Works, Buffalo, manufacturer of automobile radiators and other sheet metal parts, is erecting a brick building, four stories, 40 x 160 feet, on Tonawanda street in that city. When completed the plant will employ about 200 workmen.

The Providence Gas Burner Co., Providence, R. I., has been granted municipal building permits for the enlargement of its plant. The buildings to be erected consist of a four-story structure, 60 x 61 feet and additions, 30 x 107 feet and 23 x 24 feet.

The Hisey-Wolf Machine Co., Cincinnati, is clearing the site recently purchased for the erection of its new plant, which it expects to have ready for occupancy by Oct. 1. The main machine shop will be 90 x 165 feet, three stories. Separate offices will be erected.

John J. Bruce, founder, Cincinnati, has purchased a large tract of land on Colerain avenue, in that city, adjoining the plant of the Mueller Machine Tool Co. now in the process of construction. It is intended to erect a foundry building, 100 x 150 feet, but the plans for the structure have not yet fully matured.

The Trumbull Mfg. Co., Warren, O., has begun work on extensive improvements to its foundry plant. These will consist of a store house 24 x 100 feet, core room 14 x 20 feet, core oven 16 x 20 feet and an engine room 20 x 20 feet. A new gas plant is to be installed to furnish motive power for the foundry and machine shop.

John H. Murphy, manufacturer of sugar machinery, pumps, boilers, engines, etc., announces that his Alexandria branch, which was recently destroyed by fire, will be rebuilt at once, and that the loss will only cause a temporary interruption to the operation of the plant. All business will be handled from the New Orleans works for the present.

The Bayside Iron Works, Everett, Wash., which recently encountered a loss from fire, states that it has set up the machines that were left in the foundry building, which was only partly destroyed. New machines have been purchased, and the plant is now running to its full capacity. The machine shop, two stories, 50 x 100 feet, will be rebuilt.

The Valley Grey Iron Foundry Co., Saginaw, Mich., recently organized, is preparing to erect a plant in that city, the main building of which will be 60 x 126 feet. The company has organized by the election of the following officers: President, Alexander G. Finlay; vice president, John Luetjohann; secretary, Peter J. Redmond, and treasurer, William P. Powell.

The Improved Scale & Foundry Co.,

Harrisonville, Mo., is receiving bids for the erection of a new plant. The buildings planned to be erected include a foundry, 50 x 100 feet; machine shop, two stories, 25 x 75 feet; engine room, 30 x 30 feet; office, 20 x 24 feet, and wareroom, 50 x 75 feet, all of brick. The officers of the company are: J. W. Colburn Jr., president; R. S. Woolridge, vice president; F. H. Howard, secretary; A. L. Burney, treasurer, and L. M. Vreeland, manager.

The Peck-Williamson Co., Cincinnati, has purchased a tract of 20 acres of land in Oakley, an industrial settlement near that city, and is planning the erection of an extensive plant. The main building will be 270 x 300 feet, and will be used for foundry purposes. It will be equipped with the most modern devices. Later a steel metal shop, storage warehouse and pattern shops, each of which will be connected with the others, will be erected. A. W. Williamson is president of the company.

F. W. Tilden, whose Eagle Iron Foundry at Hinsdale, N. H., was recently damaged by fire, states that repairs are now being made to the plant. Part of the molding room was left standing, and this will be repaired. At present a cupola house, 24 x 26 feet, and a core room 12 x 32 feet of fireproof construction, are being erected. Other buildings to be constructed are a wooden structure, 40 x 150 feet, to contain a pickling room, tumbling room and chipping room and a carpenter shop and store house, 28 x 50 feet. Some of the equipment was damaged, but not beyond repair.

General Industrial Notes:—

The East Iron & Machine Co., Lima, O., states that its recent incorporation in Ohio will bring about no change in policy or management. The company was formerly a West Virginia corporation.

H. L. Cook & Co., proprietors of a foundry and machine shop, Newport, Vt., have sold their plant to Charles McClure, of West Derby, Vt. The company has been giving special attention to engines, steam pumps and general mill repairs.

The J. G. Brill Co., Philadelphia, car manufacturer, reports that it has replaced all the portions of its plant damaged by the recent fire. The conflagration destroyed the roof and contents of the upper floor of its new building.

The Michigan Stove Co., Detroit, has completed the rebuilding of its plant which was destroyed by fire Jan 8. The reconstruction work was done in record time, as only 13 weeks after the date of the fire and nine weeks after the debris was removed had elapsed before the new buildings were completed.

The Geo. Wood Mfg. Co., Inc., Newark, N. J., recently organized, reports that its output will be force feed oilers for automobiles and light machinery and experimental work. The company is now engaged in getting out its special tools for the oilers, as it proposes to make all parts interchangeable, and it expects to be able to put its product on the market within the next 60 days.

The board of trade of Ironton, O., is now engaged in securing the financial backing for a new malleable cast iron foundry that is expected to be erected soon in that city. The capacity of the proposed plant will be about 700 tons daily. Sufficient financial assurance has been given the project to insure its success. Robert R. Barringer, of Zanesville, is interested in the new plant. The board of trade in charge of the work consists of H. A. Marting, Oscar Richey, C. A. Hutsinpillar, W. G. Ward and D. C. Davies.

The Alberger Pump Co., 95 Liberty street, New York, announces its organization to manufacture and sell centrifugal and turbine pumping machinery. The officers, management and works of the company are identical with those of the Alberger Condenser Co., and in order to provide for the additional business, a large extension to the shops is now being erected. The equipment will consist of special tools for this particular class of work, and an elaborate testing apparatus is being installed. The officers of the company are: Louis R. Alberger, president; George Q. Palmer, vice president; B. W. Pierson, secretary and treasurer, and Frederick Ray, chief engineer.

The Standard Gas Engine Co., Oakland, Cal., has completed and is now operating a new plant. The principal structure is the machine shop which is 144 x 250 feet in dimensions, and is equipped with two traveling cranes and other modern machinery suitable for gas engine manufacture. Other buildings erected were main office, pattern shop, casting warehouse and a large foundry. The company manufactures marine, stationary, pumping and hoisting engines. The officers are as follows: Converse J. Smith, president; George W. Emmons, vice president; James S. Hawkins, secretary, and Thomas Jennings, treasurer. Peter Mohrdieck is superintendent of the plant.

Trade Notes:—

Robert W. Hunt & Co., engineers, will move their New York office May 1 from 60 Broadway to the new West Street building, 90 West street.

The Cal Hirsch & Sons Iron & Rail Co. has removed its Chicago office from 306-8 Railway Exchange to rooms 658-59-60 First National Bank building.

Hyde Brothers & Co., Pittsburg, manufacturers of rails and track equipment, announce the opening of an office in the Washington Life building, 141 Broadway, New York.

The Chicago offices of the American Steel & Wire Co. have been removed from the Rookery to the twelfth and thirteenth floors of the new Commercial National Bank building.

On and after May 15, the concern heretofore known as the Cooper Process Co., 506 White building, Buffalo, N. Y., will become the Steel Preservation Co.

Witherbee, Sherman & Co., Inc., dealers in iron and iron ore, will occupy new offices on the thirteenth floor of the United States Express Co.'s building, 2 Rector street, New York city, May 1.

The Morgan Engineering Co., Alliance, O., builder of cranes and special heavy machinery, will open an eastern office May 1 at 111 Broadway, New York. E. J. Parker, who has been with the concern in Alliance for many years, will be in charge.

The A. D. Granger Co., contracting engineer, announces the change of its New York office to rooms 1518-19-20 in the West Street building, 90 West street. The company still handles the products of the Skinner Engine Co., Erie, Pa.; Oswego Boiler & Engine Co., Harrisburg Mfg. & Boiler Co., Union Iron Works, Erie, Pa.; Bates Machine Co., Joliet, Ill., and the Frost Mfg. Co., Galesburg, Ill.

J. L. Pilling, 2421 Wallace street, Chicago, has closed a 10-year contract with the Weir & Craig Mfg. Co., of that city, for the manufacture of its electric and compressed air application. Mr. Pilling will dispose of the output. The general agency of the United States for the Pilling products is held by the Chicago Pneumatic Tool Co. It is announced that the Canadian Pilling Co., 180 St. James street, Montreal, has been formed and dates its existence from April 1.

The Green Fuel Economizer Co. has found it necessary to remove its Chicago office from the Monadnock block to the Old Colony building in order to secure more room. The company has been especially active in mechanical draft work for boiler plants, hav-

ing recently installed some of the largest overhung wheels ever built, notably the 18-foot 6-inch by 6-foot wheels supplied to the Grand Rapids Railway Co., and the 19-foot 6-inch by 7-foot wheels installed for the St. Louis & Suburban railway. Besides mechanical draft work the Green company reports that it is doing a large business in heating and ventilating apparatus and in artificial drying outfits for brick yards, wood-working plants, paper mills and other industrial establishments.

Fires:—

Fire in the machine shop of the Pittsburg Forge & Iron Co., Verner Station, Pa., did some damage to that part of the plant recently.

The plant of the Indianapolis Switch & Frog Co., Springfield, O., was heavily damaged by fire April 23. The loss is estimated to be about $100,000.

The repair shops of the New York Central & Hudson River railroad in the Melrose yard, New York city, were burned April 23, with a loss estimated at $100,000.

A section of the James Morrison Brass Co.'s works, Toronto, Ont., containing brass foundry, pattern rooms and molding shops, was badly damaged by fire April 22.

Fire destroyed the plant of the Sea Coast Canning Co.'s can-making factory at North Lubec, Me., April 22. The plant had been leased by the American Can Co. of New York. The loss is estimated at about $250,000.

A three-story brick building occupied as a pattern shop and store house at the United States navy yard, Kittery, Me., was destroyed by fire April 24, causing a loss of about $100,000. A large number of costly patterns, valuable brass fittings and other stores were either destroyed or badly damaged.

Many Will Attend.—F. D. Mitchell, New York, in charge of arrangements for the joint convention of machinery and supply manufacturers and dealers at Cincinnati, May 8 to 10, has received acceptances from more than 350 members of the three organizations and arrangements are being made for the accommodation of 500. Many social features are being provided for the ladies of the convention. On Wednesday afternoon, there will be a theater party with a boat ride on the Ohio in the evening. On Thursday, a trolley ride will terminate at the Rookwood Pottery and the Cincinnati Art Museum.

TRADE PUBLICATIONS.

Reference Cards.—The Cleveland Twist Drill Co., Cleveland, is distributing a set of "ready reference cards" containing useful information for the shop. There are five 6 x 9 cards presenting dimensions of regular tapers, taper shanks, speed of carbon steel drills, decimals of an inch for use with micrometers, drill lists for "V" thread taps, taps with U. S. standard threads, machine screw taps, and for pipe taps, together with some information on the care and use of high speed drills. The cards are fastened together with a brass ring for convenience in hanging on the wall of a shop. These cards will be furnished to anyone upon application to the company.

Telephone Wire.—The Indiana Steel & Wire Co., Muncie, Ind., is distributing a booklet giving the results of some tests of telephone wire manufactured by that company.

Conveying Machinery.—The Jeffrey Mfg. Co., Columbus, has issued catalog No. 80 comprising 72 6 x 9 pages illustrating conveying machinery for saw mills, lumber mills and wood-working industries.

Industrial Railway Equipment.—The Cleveland Car Co. has just issued an interesting and convenient catalog in serial form showing the complete line of industrial cars and industrial railway supplies which it manufactures at its West Park, O., plant. The form of the catalog permits the furnishing of just those parts of it in which the inquirer is interested. The catalog shows a wide variety of steel cars for mines, steel mills, foundries, coal and cement plants, coke ovens and boiler rooms with general descriptive matter accompanying the views of each.

Thermit Welding.—The Goldschmidt Thermit Co., 90 West St., New York, is distributing a handsome booklet of 18 9 x 11½ pages illustrating applications of the thermit welding by transportation companies. The illustrations show repairs on steam propellers and stern-posts and repairs to locomotive frames, driving wheels, etc.

Jacks.—A. O. Norton, Inc., 286 Congress St., Boston, manufacturer of the Norton ball-bearing jack. Thirty-six-page, 6 x 3-inch booklet. Jacks for houses, bridges, cars, journals and other services are illustrated in capacities from ten tons up.

Gears.—Catalog of the Philadelphia Gear Works, Inc., Philadelphia. A catalog of 72 6 x 9 pages, presenting stock lists of all types of spur and bevel cut and cast gears; also presents some rules for gearing and other information of value regarding gears.

Centrifugal Pumps.—R. D. Wood & Co., Philadelphia, has issued a catalog describing centrifugal pumping plants for high pressure fire service adapted for municipal and mill protection. It comprises 40 pages and describes and illustrates the high pressure fire service installed in Philadelphia, New York and other cities and shows its application to steel works, mills and other large plants requiring high pressure services. The plants described are in the main operated by centrifugal pumps driven by either electric motors or gas engines.

Fans.—The Massachusetts Fan Co., Watertown, Mass., in catalog No. 50 illustrates and describes a line of propeller fans for ventilating and heating purposes. It presents illustrations of belt-driven and directly-connected motor-driven fans of varying sizes; it also presents useful data relative to horsepower and capacity of fans.

Engineers and Contractors.—Dodge & Day, engineers, Philadelphia, have issued a handsomely illustrated pamphlet, No. 16, entitled, "Methods and Work of an Engineering Organization." It describes and illustrates some of the work done by and under the supervision of this firm, including power houses, machine shops, railroad work, manufacturing plants, etc.

Zevy's Contract Book.—The Goheen Mfg. Co., Canton, Ohio. 23 x 18 inches, ten pages. Contains on one page sample specifications for the various kinds of service where the paints manufactured by the above company can be used, such uses covering a wide variety of steel and structural work. On the opposite pages in duplicate are blank forms of contracts for all kinds of engineering work, as devised by H. Zevy, Cincinnati, Ohio. The blanks and specifications are detachable and additional copies are offered for the asking by the Goheen Mfg. Co.

Generating Sets With Compound Engines.—The B. F. Sturtevant Co., Hyde Park, Mass., Bulletin No. 142. 6 x 9 inches. 8 pages. Describes and illustrates the Sturtevant generating set, consisting of vertical compound engines direct-connected to 8 or 10-pole generators. Illustrated with sectional and detailed views of both engine and generator, together with tables of dimensions. The sets range in capacity from 17½ to 100 kilowatts.

Dryers.—A large variety of dryers are described and illustrated in a 60-page catalog, 9x6 inches, issued by the C. O. Bartlett & Snow Co., Cleveland. The greater number described are rotary cylinder dryers adapted to every class of service. Wooden cylinder dryers, kiln dryers, and other types are also shown.